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ORNITHOLOGIST AND ZOOLOGIST.



This Magazine, being designed as a means for the interchange of Notes and Observations on Bird and Insect Life, appeals for its support to all who are interested in those departments of Natural History.



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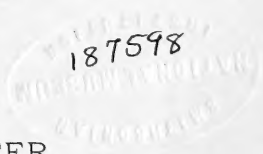
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BIRDS: THEIR NESTS AND EGGS.

BOSTON, MASS.

FRANK B. WEBSTER.

1886.



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No. 1.

Fall Migration in Bristol County, Mass.—1885.

BY CHARLES H. ANDROS.

The months of September and October were not materially different from those of the preceding year. November was on the whole warmer and with more rain than usual, though the latter month does not have so much effect upon migration as the two former; still important changes occur worthy of notice. One species of bird almost universally known, remained with us long beyond its allotted date of departure, and was then only driven towards warmer climes by a cold wave.

The bird to which I have reference is the White-breasted Swallow, (*Tachycineta bicolor*), which was last seen personally October 7th. Reports were brought in, however, of their being observed fully a week later. Its near relative, the Barn Swallow, on the contrary, departed earlier than usual, which goes to show that some birds, though they may be of the same kindred, have more animal heat than their congeners. This is shown by the Bluebird or the Robins which remain through the winter in deep and secluded swamps, venturing out in "warm spells," while the greater balance of their numbers start southward. Most species became gregarious in latter August, and I will endeavor to show when they commenced their southern journey.

Aug. 14; slightly cooler weather. Barn Swallows have begun to flock together, while Baltimore Orioles, which have kept themselves from view during the "hot spells," are once more about the houses.

Aug. 20; Crow Blackbirds are becoming gregarious, and Orioles are caroling in the tall elms as in early June.

Aug. 22; W. B. Swallows and Purple Martins are commencing to flock.

Aug. 23; this morning I was the witness of a spectacle of which I have often heard, but never had noted before. Looking from my window

shortly after dawn, I saw several Robins, which by their actions were in great distress. On looking about to see the cause of this outcry, I perceived in the top of a tall elm a Purple Grackle, who appeared busy over something which he held in his claws. On nearer investigation I found this to be a young Robin, which he was devouring with great eagerness. The glutton was evidently satiating his hunger, and by the time the tender morsel was in his stomach he must have been decidedly replete. For such feats of cannibalism he merits a good dose of the leaden pellets whenever he is met.

Aug. 24; Purple Martins are now very common.

Aug. 30; Baltimore Orioles still remain common.

Sept. 3; weather cool and fair with light N. E. wind. The last Kingbird was seen to-day. Small flocks of Purple Grackles are occasionally seen, and great numbers of Cliff Swallows are passing over, taking a south-easterly direction. A single Nighthawk is also seen.

Sept. 4; fair with light wind blowing from the north. Red-eyed Vireos and Black-and-White Creeping Warblers are common. This brings to mind the fact that a female of the latter species was seen on the side of our house Aug. 7th, where it had hopped from a spreading horsechestnut. This seems rather confidential for a bird which, though not strictly woodland, yet does not often venture into our populous cities.

Sept. 6; saw to-day an immense flock of Cliff Swallows flying in a southerly direction. They were the last seen.

Sept. 8; the last Wood Pewee, (*Contopus virens*), was seen to-day on an old oak stub. I dissected a Goldfinch and found the stomach to contain small milky seeds, probably from the fir cones, on which they are at present feeding to a large extent.

Sept. 9; strong southerly wind. Great numbers of Purple Martins passed over, taking a southerly direction. The flight was quite steady for as much as forty-five minutes.

Sept. 10; fresh N. E. wind. More Purple Martins passed over, and a single Nighthawk seen.

Sept. 12; Maryland Yellow-throats seen to-day. Passed through a patch of heavy pine woods, which for years has been the nightly resting place of numberless Blackbirds of both varieties—Crow and Redwing. I noted a flock enter late in the afternoon, which I estimated to contain two thousand birds. A single Yellow-throated Vireo, and several Pine Creepers were noted.

Sept. 13; a large number of Chimney Swifts flew over, and with them came about a score of Purple Martins. They were the last seen of those species.

Sept. 14; a Ruby-throated Hummer was noted about some flowers to-day.

Sept. 16; a single Prairie Warbler seen to-day.

Sept. 17; three Ruby-throated Hummers were noted perched on a fir tree. They were uttering mournful chirps. I had never before heard a sound from these diminutive creatures save the "mouse like squeak" uttered when they meet in mid-air. A young bird which I once attempted to keep in confinement gave vent to a faint hoarse sound repeated at intervals of five or six seconds.

Sept. 20; a large flock of both Cow Buntings and Red-and-Buff-shouldered Blackbirds were noted. Our Grass Finches are being reinforced by migrants from the north.

Sept. 22; Sora Rails, (*Porzana carolina*), were noted for the first time to-day. While passing through a piece of woods bordering on a marsh I nearly trod upon a Woodcock, which after running a short distance took to flight.

Sept. 24; a single Chimney Swift was seen this morning winging its way southward. I noted two instances of the weakness of the English Sparrow to-day. On one of our public streets I saw one running, now and then tumbling over after the manner of a young Robin. Again, as I was passing a brook where several of them were enjoying a bath, they took to flight save one, which jumped into the water where for some moments it swam about or rather beat the surface with its wings, and before it could reach terra firma it sank back exhausted, and by the time I rescued the body all life was extinct. Can any of the readers explain this apparent feebleness of this Sparrow?

Sept. 26; Towhee Buntings still remain common, though keeping rather out of sight. Towards night a flock of about twenty White-breasted Swallows were noted soaring about overhead.

Sept. 28; Sora Rails still remain. A Solitary Tattler noted to-day.

Oct. 5; several W. B. Swallows noted to-day by a reliable friend.

Oct. 7; two W. B. Swallows were noted to-day making their way south. The last seen.

Oct. 9; Pine Creepers are at present very common.

Oct. 10; heard the "ank, ank" of the Red-bellied Nuthatch this morning. The Yellow-rumped Warblers arrived in a body to day, over a hundred being seen in a short walk. Towhee Buntings also seen.

Oct. 11; Juncos came to-day, and a single Pewee seen. Towards night a large flock of Purple Grackles passed over us towards their roost near the "clay beds." At this time we were within forty rods of their nightly abode and the noise was fairly deafening. Two or three of their number stood higher upon the trees than their companions, as if keeping sentinal duty. In a moment another flock came sailing over the trees and swelled the tumult until the air seemed turbulent with the racket. By skillful manœuvres we managed to get directly underneath them, and the air seemed filled with hundreds of revolving wheels, all decidedly in need of lubrication.

Oct. 18; noted Chipping Sparrows and Bay-winged Buntings as common. Several Swamp Sparrows also observed, and a single White-throated Sparrow seen.

Nov. 1; the Purple Grackles still remain, though not in such large numbers as two weeks ago.

Nov. 15; Tree Sparrows first noted as common.

Nov. 22; four flocks of Canada Geese passed over towards the south. Two of them which I observed contained twenty-seven and forty-two respectively.

Nov. 26, very stormy. Golden-crowned Kinglets, Tree Sparrows, Juncos and Goldfinches were noted, and my brother reports a Pine Grosbeak.

Nov. 30; A White-throated Sparrow (*Zonotrichia querula*), seen this morning, perched on a Willow tree, on the south side of a sloping sand bank. It appeared cold and languid, and when I frightened it from its perch it uttered a faint "tseep." I had an opportunity to take notes of its colorations, which correspond with those given by Minot and Samuels. Mr. Minot says in his note on this species, in his book: "I have seen them as late as November 14th, and have heard of them being seen near Boston in winter, but from insufficient authority." Considering the weather which we have had during November, it is not remarkable after all, that a single specimen (or more) should be seen.

Dec. 25; Weather mild. No new arrivals from the north as yet noted.


Practical Taxidermy.

BY FRANK B. WEBSTER.

CHAPTER V.—STUFFING.

In resuming our work we will first make a suitable stand. For small birds construct a simple T, similar in part to the one referred to in Chapter II. The cross piece should be from two to three inches, and the upright from four to six inches, made of wood about the diameter of a lead pencil, joined by glue and brad. The bottom should be sharpened. (See fig. 1.) Boring a hole in the work table, this can be stuck in and taken out at pleasure; also in packing birds away in boxes, this stand is very easily handled. For birds larger than Robins, it will be better to have them made with a stand. It is a good plan to have an assortment of these made up. For game birds, Ducks, Gulls, &c., stands from five to ten inches square, and one-half to one inch thick, will be found sufficient. The tools we will require will be spring stuffers, shears, plyers, wire-cutters, fine forceps, needle, bit and cop.

For a Bluebird, we will use No. 20 wire, and after straightening will cut it as follows: One piece for body, two for legs, four for wings, one for tail. We also require a piece of finer wire to use in spreading tail. The best rule I can give for lengths is: Body wire, one and one-half times length of bird; leg wires, twice width of body, length of legs and enough over to fasten the bird to perch; wing wires, twice the width of body; tail wire, length of bird. For our Bluebird these will be: Body wire 9 inches, leg wires 7 inches, wing wires 3 inches, tail 6 inches. A little variation will make no practical difference, but it is better to have them too long than too short. They are all to be sharp at one end. Take the body wire, make two loops in it at a distance apart less than the length of body of bird. (See fig. 2.) Wind excelsior around this in the form of an egg, somewhat less than the size of body taken out. Do it firmly, and then wind it with cop; next wind tow about it until it is fully the size of the body, and again use the cop. It should now be a good shape and smooth. (See fig. 3.) If the body is made of tow entirely it will be too soft; the excelsior is also much lighter. If the body is for a large bird, after putting on the first excelsior wind it with fine wire, (No. 20) and then give another layer of the excelsior. The wire will be found to make a very firm form, which is necessary. The tow being soft makes a smooth finish. Many make the body first, then pass the wire through it and clinch it; but I prefer the former. The difference is of no great im-

portance. Try both ways. Next cut a quantity of tow fine, about one inch, and pick it well apart. This is for filling. The advantage of cutting it will be seen in using. (For large birds I sometimes cut excelsior and tow and mix them.) We now take our skin, holding it by the bill with the left hand, pick up a pinch of the filling and with stuffers place it in the throat, well up in the bill, by the opening from which we took the body. Next place some in the skull cavity, and more between that already placed. This should fill the head out in good shape. Next fill the neck fairly full, loosely down to the shoulder. (In Herons the neck should be filled rather fuller than natural, and then from the outside you can press it to the right size. This will make the neck hard and it will hold its shape. When done *be sure you do not leave it too large.* Ducks are the same. Owls should be filled very loosely). Next lay bird on its breast, tail towards you; hold the tail quills between the thumb and finger of the left hand. With the right hand pass a fine wire through each quill at a point under the upper coverts, so as not to show. By sliding the quills to right and left on this wire you can give the desirable spread. (See fig. 4.) If the bird is a large one, with the hand vise force the long needle through the quills, which will sometimes be found very hard. Drawing the needle out you can easily substitute your wire. Another way which works nicely when the feathers are too fine to be wired, is to clamp the tail with fine wire, say No. 20 to 24. (See fig. 5.) Now turn the bird on its back; pass the leg wire through the foot, up the leg between the bone and outside skin, past the joint to the inside of body skin. Drawing out leg bone the wire will run with it, and wind cotton around both bone and wire till it is the same size as the natural leg was. For large birds use wire and tie it around; draw the leg back in place, leaving the wire a little longer than the bone, so that the joint can be seen. Proceed in like manner with the other leg. Next take the body; run the long wire end up through the neck (center of filling) and through the skull, the point passing out through the skin at the top of the head between the eyes. Push the body in till it occupies the place of the natural one. Next take the leg, press the wire point *just behind the center of the side.* Now by pressing, push the wire through the body, and when through, with plyers bend it in shape of  and draw back by the other end. Slide the leg up on the wire till the bone presses against the body. It will then be held in proper place. Do the same with the other leg. This is very important; if not in proper place and firm, the bird will not balance

properly and you will regret it as you proceed. The body now lies on its back, the wings under, and appears like Fig. 6. Cut the wire off from the body at the tail end, leaving just enough to catch the skin on at A. Now with the cut tow fill in carefully all about the body, base of neck, breast, upon the shoulders, back of the legs, not too much, but enough to make the form of the bird good. When done, the winding will reduce the size somewhat. Special features that are to be brought out can be seen to at this time. The next step is to draw the skin carefully together over the stomach and to sew it up. Then bend the legs back together towards the tail. If too long, push them on the wire towards the head. Next make a sharp bend at the joints B, B, forward, and the wire at the sole of the foot, *backwards*. Next, taking the perch, drill two holes in the cross piece, the same distance apart that the bird is at the hips; pass the leg wires through them and fasten. (See Fig. 7, C.) Stick the perch in the hole in your work table. At this stage do not be discouraged if your bird looks like a cornfield in a September gale. Bend the body in shape, being careful that the legs are right, giving it the position you wish by pressing under the wings, arrange the wing bones in their place and with wire pin at D, and put another under the quills at E, on both sides. Next pass a wire through the tail knob F, (under tail feathers) and pin the tail to the body. Bend the head up, draw it a little on the wire. Arrange the feathers on the shoulders carefully, then push the head down into its place and by taking hold of the bill bend it into shape to please your fancy. If the skin is in proper place the feathers will now lie quite smooth; if not, there is some cause for it. If a place bunches up, say on the shoulder, with your long needle lift the skin up a little, get all the feathers, so far as possible by means of your fine forceps, smooth and in place. With your cop now wind the bird. (See fig. 8.) Sometimes if there is a place that I wish to wind down especially, I put in extra wire. (G. Fig. 8.) If

there is any trouble with the wings, or you wish to spread them a little, use a wire bent like Fig. 9 as a clamp. (See H, fig. 8.) Sometimes when a bird is large and the wings badly broken, I make a saddle cover, passing it through the two outer quills and under. This lies across the back. (See fig. 10, I.) After the bird is well wound you can then give it a finishing shaping if needed. This will be your last chance, so do not slight it. If there is any one present have him suggest any improvement. By this, faults to which we are blind may be rectified. Carefully round out the eye-holes, making the lids in good shape. Sit the bird away, not near a stove, but where it will dry evenly. It is a good plan in about ten days to cut off the windings and adjust any feathers that have been overlooked, and then re-wind.

SPREADING WINGS.

This may be done in two ways. First, if a small bird, pass the pinning wire in at the joints, (J, fig. 6,) on the under side into the body (See K, fig. 11), and another wire (L, fig. 11). Then clamp it as shown in the same figure. If the feathers do not lie smoothly, cut a piece of paper and place it like M, (Fig. 11). When dry the wires may be cut off and the wing will be found dry in place. For larger birds, pass a wire through the wings in the same manner that you do the legs; fasten into the body at N, N, (Fig. 6,) and clamp in the manner shown in figure 11. Figures 12, 13 and 14, will give a general idea of the position of the wires.

TO RAISE CRESTS, EARS, ETC.

Pin a wire in back of the place desired to raise; bend it as shown in figure 15, and place cotton between the wire and feathers.

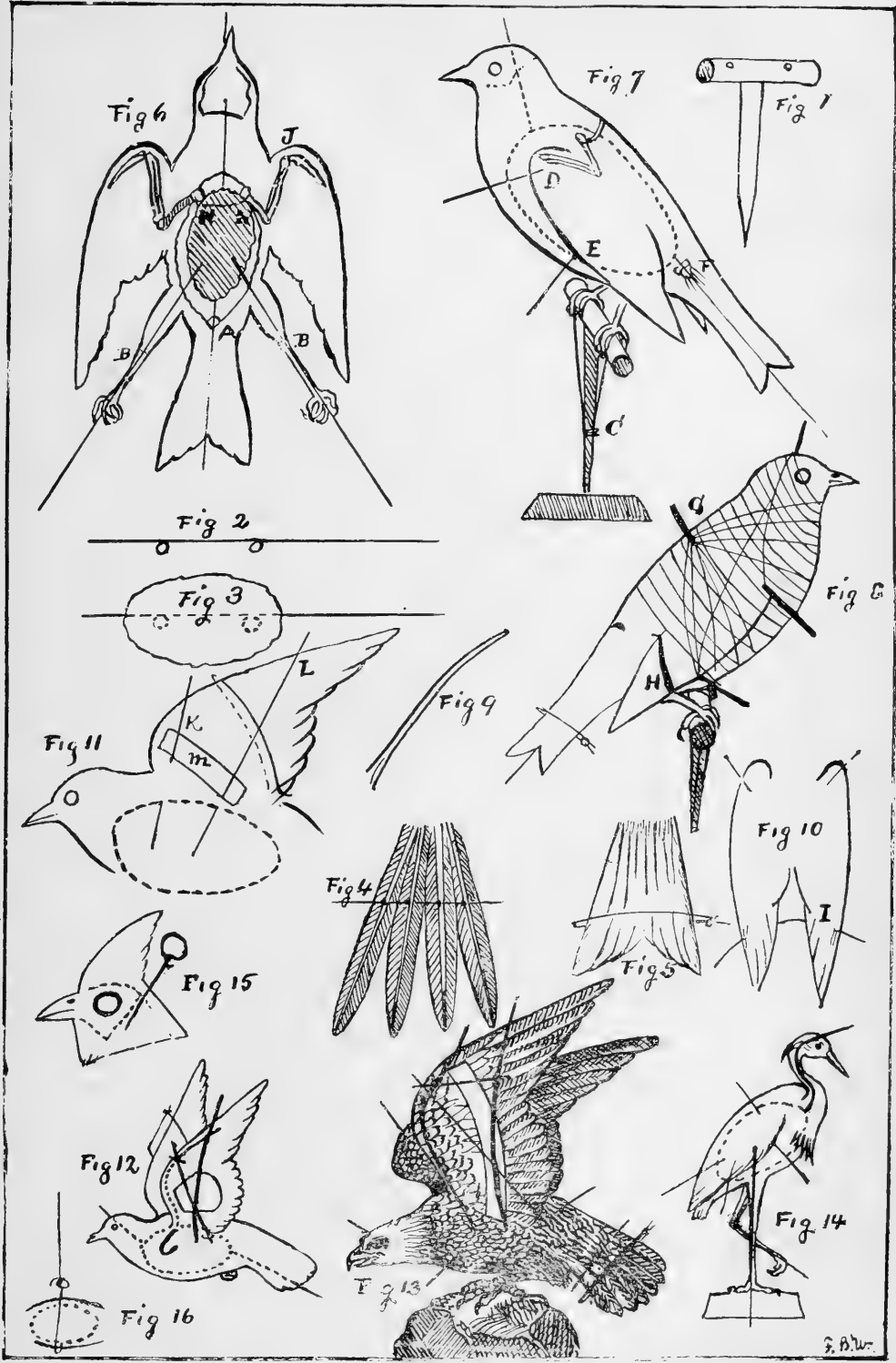
TO SUPPORT BIRDS FLYING.

Pass wire through the body from back between the wings, down out through the breast, bend in form of U and draw back; cut wire off, leaving just enough to bend in form of loop on top. To this fasten very fine wire by which to suspend. (See fig. 16).

EXPLANATION OF PEN SKETCH.

- Fig. 1.—T perch.
- Fig. 2.—Body wire, showing loops.
- Fig. 3.—Made body.
- Fig. 4.—Tail spread by wing quills.
- Fig. 5.—Tail spread by clamping.
- Fig. 6.—Skin with artificial body in ready to sew up.
- Fig. 7.—Bird placed on perch.
- Fig. 8.—Bird wound.
- Fig. 9.—Wire clamp.

- Fig. 10.—Wings held in position by saddle wire.
- Fig. 11.—Manner of wiring wings spread.
- Fig. 12.—Pigeon suspended flying.
- Fig. 13.—Eagle, showing method of wiring.
- Fig. 14.—Heron, showing method of wiring.
- Fig. 15.—Wire to hold up crest.
- Fig. 16.—Wire passing through body to hold bird, for suspending.



S. B. W.

I will now go over the ground in brief.

STUFFING.

Fill in throat.
 Fill in skull cavity.
 Fill neck.
 Spread tail.
 Wire legs, making thighs.
 Pass body wire through neck, out at top of head.
 Push body in place.
 Pin legs in place and clinch them.
 Fill in about body.
 Draw skin together and sew up.
 Bend legs in shape.
 Place on perch.
 Place wing bones in position and pin them.
 Put in wing supports.
 Put tail in position.
 Bend head into place.
 Clamp wings if necessary.
 Wind bird.
 Shape it and attend to eye-holes.
 In two days cut off windings and re-wind.

GENERAL NOTES.

Some taxidermists build the neck on the body wire and then force it in place. I never do. With a soft filling you can lengthen and shorten the neck at pleasure. Not so with the other way. The only reason I have had suggested to me for doing it in the other manner, is that a soft filling will allow the head to settle. Use excelsior with tow and there will be no trouble.

Birds that have been opened on the back to skin are stuffed in the same manner; it makes no difference with the process whether it is done through the breast or back. When the skull is shot so that it will not hold, remove it and make as large a form on the same plan as the body (without a wire) as you can force through the neck with forceps. Put it in place and pack around it with soft filling. Parts of bills and legs can be patched by *papier mache*, and can be colored. Bills, feet and legs can be painted if desired, when perfectly dry. Use an elastic dryer and tube paint. All the natural color is lost as the specimen dries, and can only be reproduced by artificial coloring. I am aware of the opacity of paint, but prefer it in many cases to the dead, faded color. In the case of the Wood Duck it is half the beauty.

SETTING EYES.

When the bird is dry, push the cotton in and force wet cotton into the eye-holes. In a few hours the largest will be found relaxed. When the lids are soft, remove the wet cotton and fill in with soft putty. Set the eyes in it, and use care

to get a good expression. *Clay, plaster, and glue for setting eyes, are to be avoided in good work.*

In stuffing Owls I often set the eyes at once, but for other birds I usually do it after they are dry.

FEET.

Ducks' feet especially, should be pinned out to the stand or they will shrivel when drying. If by oversight they have done so, apply wet cotton till soft and then pin them. Be careful not to split the web in stretching them out.

BILLS.

If the bill shows a tendency to open when drying, and it is not desired, it can be closed by passing a strong pin through the under side up into the roof of the mouth and winding a wire around it at the place so that the pin will keep it from slipping off.

The Lesser Redpoll.

BY ARTHUR H. LOCKETT.

The interesting, and hardy little bird, corresponds in Winter to the Goldfinch in Summer, but is a little larger than the Goldfinch, and with more modest colors.

The male wears a beautiful rose colored vest, with a modest black tie just under his chin. His swallow-tailed coat is striped brownish gray and white, but the handsomest part of his outfit, is a beautiful crimson skull-cap, which is also a weakness of his wife's, but she does not wear red in any other part of her costume.

They are very irregular in their movements, some years appearing at one time, some years at another; common one Winter and few or none to be found the next. Last year they came and went late, not arriving here (Exeter, N. H.), until the first week in March, and leaving about the middle of April. They were in very large flocks, and wandered incessantly in search of food.

When on the ground they are very easily startled, but on the other hand very easily re-assured; taking to the trees or bushes at the slightest sound, but in a second or two back again picking up seeds as before.

Their note is very peculiar, for the note or rather chatter of one bird sounds like that of a great many.

In the latter part of March I caught a well marked female, and tamed it, which was very easily done, and found it a very pretty little pet. It never disturbed me by loud notes, as at times a canary does, but sitting on the top of its cage, would chatter as if talking to itself for an hour at a time, and I could shut my eyes and imagine that I heard a whole flock of these happy little creatures, hopping about on the crust of the snow, fulfilling the duty for which God created them.

Notes from Manayunk, Philadelphia.

BY ELLWOOD C. ERDIS.

Carolina Wren, (*Thryothorus ludovicianus*). May 24th, secured a set of four eggs of this species. The nest was in the top of a wooden box at the end of a bridge. As the bird sat on the nest I caught her, when she tried to pick me, and made a chipping noise. May 30th, I found a nest with one egg of same species in an old house. The nest was placed on a shelf, and was merely a few sticks. The bird did not finish her complement of eggs but deserted her residence immediately.

August 2d, a friend showed me another nest of this bird, on a ledge of rocks, on the side of the Wissahickon Park "drive." It contained four young, and was placed behind a small sapling. August 19th, I found a nest in a house. It was placed on a shelf in a cupboard and contained four fresh eggs. On the shelf above was another nest of the same materials, but without the arch. I suppose it was used by the male. These birds are residents as I have seen them in Mid-winter.

Robin, (*Merula Migratoria*). May 27th, took a set of six Robin's eggs, an unusual number.

Ruby Throated Humming-bird, (*Trochilus colubris*). May 30th, this afternoon, as a friend and I were tramping through the woods we saw a hummer. It soon alighted on a limb of a spruce tree, and began to work at its nest which was on the end of the limb, and about fifteen feet from the ground. The nest was not quite completed, and the bird took no notice of us. I obtained the eggs on June 2d. June 2d, I found another Ruby throat's nest in the same woods about 200 yards away. It was on the end of a large spruce limb, and about thirty-five feet high. In trying to get the eggs they broke. Twenty yards off was an old nest which I suppose had been used the year before. June 5th, saw a boy find a nest on a spruce limb overhanging a small run, but he broke the eggs in trying to get them. July 19th, took a set of two eggs from a spruce limb about five feet high. The tree was on the side of a hill along Wissahickon Creek and about ten feet from it.

Worm Eating Warbler, (*Helminthoerhus vermicorus*). June 19th, while going through a high open part of the woods on Wissahickon Creek. I discovered a nest of this bird situated on the ground at the foot of a small laurel bush, and mid-way on the side of the hill. The bird sat on the nest until I was within three feet of it, when it fluttered along on the ground just out of my reach. The nest contained two eggs partly incubated. It was composed of pine needles, lined with thin narrow strips of grape-vine bark, and

was very pretty. There was no attempt whatever at its concealment, as I had a very good look at the bird there can be no mistake. These birds can be seen during the coldest day in Winter hopping around the lower limbs of trees, and are not shy, but will allow of a near approach.

Hybridization of the Hooded and Carrion Crow.

[In reference to the interbreeding of the Hooded and Carrion Crow, we quote from a private letter from Mr. Henry Kerr, of Lancashire, England, author of "The Birds of Northumberland and Durham."—ED.]

"I notice the remarks on Hybridization in O. and O. for July as to the interbreeding of the Hooded Crow and Carrion Crow. I may add that our most eminent British ornithologists, Mr. Yarrell, Mr. Seebohm, Prof. Newton and Mr. J. Hancock (our greatest living authority), now consider that the Hooded or Royston Crow is but the northern type, or variety of the Carrion Crow. The "Hoodie" except in rare instances, is but an Autumn and Winter visitor in England; but in Scotland (central and northern) the "Hoodie" is a permanent resident, and it freely interbreeds with the British Carrion Crow. Mr. John Hancock ("Catalogue of the Birds of the Northumberland and Durham," 1874), states that he has (in Scotland) examined many nests, where the parent birds were, one a black Carrion Crow and the other a grey or Hooded Crow. The progeny in most instances resembled both parents—that is—some of the nestlings were quite black plumaged, like the Carrion, and others grey-backed like the Hooded; in other instances the nestlings had a "mixed" plumage, partaking of both parents. Mr. John Hancock thus sums up his notice of the Hooded Crow, 'Notwithstanding the apparent distinctness of this species, it is probably a mere race of the Carrion Crow, as has been pointed out by several distinguished ornithologists. The two forms readily breed together. Mr. Yarrell mentions several instances of their having done so in both England and Scotland; but it is in the latter country where this intercourse [and where both so-called species are stationary] most frequently takes place. * * * * The fact of this extensive interbreeding of the Carrion and Hooded Crow is very interesting, and is contrary to analogy. Hybridization is not uncommon in the animal kingdom as an exceptional occurrence; but I know of no other instance of such a constant unhesitating union of two so-called species as is here exhibited.'"

THE
ORNITHOLOGIST
—AND—
OÖLOGIST.

A MONTHLY MAGAZINE OF
NATURAL HISTORY,

ESPECIALLY DEVOTED TO THE STUDY OF

BIRDS.

THEIR NESTS AND EGGS.

DESIGNED AS A MEANS FOR THE INTERCHANGE OF NOTES
AND OBSERVATIONS ON BIRD AND INSECT LIFE.

FREDERIC H. CARPENTER, Editor,

REHOBOTH, MASS.,

FRANK B. WEBSTER, Publisher,

409 WASHINGTON, ST., BOSTON, MASS.

Editorial.

With the present issue THE ORNITHOLOGIST AND OÖLOGIST enters upon its eleventh year of publication, and greets its readers with hearty wishes for a happy and prosperous new year to all.

As will be noticed, a few changes have been made. The kindred science of Entomology has been accorded a department, under the supervision of competent entomologists.

Oölogy, as a special branch of the study of Bird Life, has many students who do not particularly care for the ornithological science in general. This department is under the immediate charge of a gentleman who has made Oölogy an especial and life-long study.

This will necessarily incur to us additional labor, time and expense, and we can but ask a reciprocation on the part of our readers, urging them to endeavor to increase our subscription list, which by a very little individual effort, would be sufficient to reimburse the publisher for the deficiency.

We dislike to constantly refer to this latter fact, but we doubt if there is in existence at present, a magazine that has

survived a decade of years with a yearly financial loss, together with such marked improvement, as the O. and O. It being the intention of the present editor to co-operate with the publisher in securing for the O. and O. a financial basis, we deemed it not out of place to mention the above in our salutatory.

Articles of interest to our readers are invited, and we will be pleased to make space for any communication which shows itself to be a truthful record of careful observation, in any department of natural history, but principally, as the name of this magazine announces, we shall devote our columns to the science for which it was founded, and the purpose it has ever kept in view during a half score of years, and with which it proposes to keep apace in the future.

Ornithology and Entomology are kindred sciences, and can be studied in conjunction with advantage. Our bird life, its scarcity or abundance, depends largely upon its supply of food, which in the great majority of species consists of insect life in its various forms from the larvæ to the perfect development. A correspondent in this issue gives some timely suggestions to which we refer our readers.

The particular line of investigation should prove of interest, even to the strictly ornithological student. We would like to hear from others upon the same subject.

Publisher's Editorial.

The flight of time is marked by important events of the past. A brief sketch of the O. and O.'s career was given in a previous number, and to-day we add another page to its history. With the completion of Volume X, Mr. Eaton Cliff retired from active connection with the magazine. Assuming the editorship as successor to Mr. Wade, for two years he has borne the burden, without remuneration, devoting more time than he really had at his command. Entering upon his duties unacquainted

with the subject to which the magazine was devoted, with good judgment backed by a keen perception, he has succeeded in advancing the "O. and O." in a manner that has brought many a letter of congratulation to the publisher. It was with sincere regret that his earnest request for release was entertained.

It has been thought advisable to divide the O. and O. during the present year into departments, in order that more attention might be devoted to the different interests, and it is hoped that the readers who are especially interested in any one subject will bear patiently and with good will the portion that is devoted to the others, remembering that up to the present time the O. and O. has not received sufficient support to pay for its publication, from all, much less, from any particular class. The present volume bids fair to be one of unusual interest. As in the past, the O. and O. is too much of a favorite to be left in the cold. At a hint, friends came to the front, volunteering their services, almost causing embarrassment in choosing. Mr. F. H. Carpenter, who will act as general editor, is by no means a stranger to the old readers and needs no introduction. His *Brown* finish will no doubt tint the pages of Vol. XI. The oölogical department, in the hands of J. Parker Norris, Esq., of Philadelphia, can scarcely fail to become accepted authority. Messrs. Wright & Bates, professional entomologists, of Boston, the publisher has reasons to believe will cause their section to teem with entomological ecstasy. The O. and O. in the past has been published in an independent spirit, uninfluenced by any pretended authority, a representation of no association, but of the working naturalist, and so it will continue.

The publisher earnestly requests its readers in every possible manner to assist the gentlemen who take the reins in hand, to produce a glorious sunset at the close of '86.

FRANK B. WEBSTER.

Summer and Fall Shore Bird Migration at Cape Cod—1885.

BY J. C. CAHOON.

In the August number of the O. and O. I gave a list of the shore bird migration at Monomoy Island. Below is a list of the summer and fall migrants. No notes were taken between June 26 and July 12, as I was away from the island during that interval.

July 12, weather fair; found four Semipalmated Sandpipers on the flats and several Least, do, on the meadows; Roseate and Least Tern abundant; Arctic Tern common; young Spotted Sandpipers full grown. July 13, fair; no new arrivals noted. Found four Semipalmated Sandpipers feeding along the surf the same as Sanderlings. July 14, cloudy with wind S. E.; heavy rain in the morning. This storm brought along a large number of Least and Semipalmated Sandpipers; several Least Tern collected were moulting. July 15, fair and cooler; collected young Piping Plover which were full grown; found a nest of the Least Tern containing two eggs, incubation fresh. July 16, fair; Semipalmated Sandpipers abundant. July 17, foggy; collected a Velvet Scoter. July 18, clear; new arrivals seen were five Willets and several Petrel. July 21, wind S. W. and blew very fresh, rain fell in the afternoon; found four Red-breasted Snipe and several Semipalmated Sandpipers on the flats; two of the Snipe secured were adults; saw two Greater Yellow-legs. July 23, wind E; saw a large flock of Coot out in the bay. July 27, wind S. E.; among new arrivals were several bunches of Sanderling and three adult Robin Snipe. July 31, wind E; saw two Richardson's Jaegers; Least Tern diminishing in number.

August 1, wind E.; new arrivals were a small number of Black-bellied Plover; Semipalmated Plover abundant. August 4, wind blowing fresh from S. E.; rained a part of the day. Aug. 6, wind N. E.; found Red-breasted Snipe and Turnstone common; one large flock of about fifty Black-bellied Plover seen; a Willet and a Hudsonian Curlew noticed. Aug. 7, a bunch of five Robin Snipe seen. Aug. 8, found a young Least Tern that could hardly fly. Aug. 13, wind S. W., foggy all day; six young Bonaparte's Gulls, fifteen Greater Yellow-legs, and four Black Ducks noted as new arrivals. Aug. 15, wind S. W., light rain in the morning; a large flock of Yellow-legs seen; new arrival, a Black Tern; Piping Plover are leaving the island. Aug. 15, wind N., blew fresh; number of Black Tern, increased to seven, only one of which was an adult; one Jaeger and

several Greater Yellow-legs seen; no Arctic Terns seen for several days. Aug. 17, saw several flocks of Black-bellied Plover. Aug. 18, wind S. W.; a flock of Golden Plover arrived to-day, but did not make any stop. Aug. 27, wind N. W., and blew very fresh; found a small bunch of seven Pectoral Sandpipers in a meadow; no Least Tern seen; saw one bunch of young Robin Snipe and Turnstone together; Sanderlings more abundant; two Marsh Hawks, one Nighthawk and several Summer Yellowbirds seen. Aug. 28, fair; collected a male Solitary Sandpiper, one Baltimore Oriole, one Summer Yellowbird and a female Redstart. These I secured among some old driftwood on the beach. Saw one Kingbird and quite a number of Warblers, Sparrows and Swallows; Barn Swallows abundant; saw a flock of ten young Black Tern. Aug. 29, wind N. W.; Summer Yellowbirds quite common. Aug. 31, wind S. E., rain fell in the morning; Black Tern very abundant; saw as many as several hundred during the day; saw one flock of twenty-three sitting on the flats, but did not observe an adult among them; one Golden Plover seen.

September 1, wind S. E., and foggy; saw a large flock of about one hundred Black-bellied Plover. Sept. 2, wind N. W.; saw a young Robin Snipe; several Great Northern Divers seen off in the bay. Sept. 3, wind S.; Black Tern very abundant. Sept. 4, wind S. W.; saw a small flock of Black Ducks; Semipalmated Plover and Sandpiper's growing less abundant. Two adult Roseate Tern shot to-day; they had red bills same as the Common Tern; one Tern secured had no tarsus, it being gone from the first joint above the foot. The stump had healed and left a little hard bunch on the end. Sept. 6, wind S.; new arrival seen was one Eskimo Curlew, which I flushed out of some moss on the sand hill. Sept. 7, wind S., cloudy; Roseate and Common Tern very abundant on the sand bars; one Jaeger seen. Sept. 8, wind N. E., cloudy; Sanderlings less abundant, and nearly all remaining are young. Young Black-bellied Plover seen to-day for the first time; Richardson's Jaegers common; large numbers of White-bellied and Barn Swallows flying about; Sharp-tailed Finches abundant. Sept. 9, wind S. W., rained all day; saw large numbers of Black Tern feeding on the meadows that were overflowed; Sanderlings diminishing every day. Sept. 22, wind S. E., rained part of the day; several large flocks of Black-bellied Plover arrived. Sept. 23, wind blowing fresh from the N. W.; the storm of last night caused a "flight" of Shorebirds. I found on the flats, at low tides, Sanderlings, Red-backed Sandpipers (young) and Black-bellied Plover abundant. On the meadows, which the rain had

overflowed, I found Semipalmated, Least, Red-backed and Pectoral Sandpipers abundant. Greater Yellow-legs and Willets also seen on the meadows. Collected two Hudsonian Curlew and one Bonaparte's Sandpiper out of a flock of Semipalmated Sandpipers. After flushing the Pectoral Sandpipers, noticed some would only fly a short distance and drop down in the grass, while others would jump up like the Wilson's Snipe and fly in an irregular course until at quite an altitude, when they would circle for a short time overhead, then suddenly pitch down and alight in the same place they started from. When they fly a short distance their cry is a single low "tweet," but when they spring up quickly and fly a long distance their cry is louder and often repeated. Sept. 24, while in the meadows collecting Pectoral Sandpipers, I had the good fortune to secure an adult male Buff-breasted Sandpiper that was leaving the meadows high up in the air. Sept. 25, wind N, blew very fresh in the afternoon; shore birds not as abundant as the day previous; new arrival was a Hudsonian Godwit, which I shot on the flats. One small flock of Golden Plover seen. Richardson's Jaegers more abundant; saw six at one time chasing Tern. Sept. 26, wind S.; only a few Sanderlings seen; Pectoral Sandpipers are diminishing in numbers. Found a Sora Rail dead on the beach, probably killed by flying against a stake. Sept. 28, wind N., cloudy with light rains all day; found Hudsonian Curlew, Greater Yellow-legs and young Red-breasted Sandpipers common; several small flocks of Black-bellied Plover seen. Loons and Sea Coot flying about. Sept. 29, wind N.; Richardson's Jaegers common; also saw two Long-tailed Jaegers; collected six Jaegers in different plumage. When one is shot the others hang over it, so that many can be killed at one time. Saw as many as twenty-five sitting on the flats. Several that I shot had sand eels in their bills. Sept. 30, wind N.; only a few Pectoral Sandpipers seen on the meadows; a large flock of Black Ducks noticed. Shot an American Bittern near a small pond hole.

October 1, wind N.; Jaegers abundant; several flocks of Sanderling seen, also a few Black-bellied Plover. Oct. 2, wind N. E., foggy; found one Bonaparte's Sandpiper on the flats in company with Red-backed, do. Sanderlings scarce; Terns leaving. A small flight of Greater Yellow-legs arrived last night. Oct. 3, wind W.; a few Sanderlings and Red-backed Sandpipers remain. Greater Yellow-legs quite abundant; a small flock of the Black-bellied Plover seen. Saw several Green-winged Teal and Shovellers in a small pond on the meadows. Saw a Turnstone on the beach. Large Gulls abundant.

OÖLOGY.

J. PARKER NORRIS, EDITOR.

In this department it is proposed to record observations in that important branch of the science of Bird Life—Oology—and request the favors of our contributors, as an assistance to our efforts; for it is only by opinions, gathered from various experiences, that we can achieve any definite result in ascertaining what natural law governs a science, so replete with variations and interesting phenomena as Oology.

Mr. Oliver Davie, of Columbus, Ohio, sends the first sixteen pages (advance sheets) of his new *Egg Check List and Key to the Nests and Eggs of North American Birds*, which will be ready about the first of February next. It will contain between 180 and 200 pages octavo, and will be illustrated by seven full-page engravings of birds and their nests. The descriptions are much fuller and more satisfactory than in the first edition, and much new material is added. This will be found especially noticeable in many species where descriptions are for the first time given of the nests and eggs of very rare birds. The nomenclature adopted is that of Mr. Ridgway; and the work is presented in very neat form, and will be welcomed by many. When it is published it will be more fully noticed in these columns.

The Eggs of the White-tailed Hawk.

Not finding any account of the eggs of this beautiful Hawk (*Buteo albicaudatus*), in any work with which the present writer is acquainted, it has occurred to him that a description of them would be welcome to the readers of THE ORNITHOLOGIST AND OOLOGIST.

Early in the spring of 1884, a party of gentlemen consisting of Messrs. G. B. Benners, W. H. Werner and T. S. Gillen, went on a collecting tour to Texas. While there they secured many rare birds and eggs. Among the species found nesting near Corpus Christi was the White-tailed Hawk. The country about there is destitute of any high trees, and this fact caused the Hawks to choose curious nesting places for *Buteos*. In the Eastern States, and wherever they have been molested, this genus select lofty trees, often seventy or more feet from the ground, on which to build their nests; but near Corpus Christi the *Buteo albicaudatus* found this neither possible nor necessary.

A set of two eggs collected by Mr. Gillen, on

May 2, 1884, were laid in a nest on the top of a chapparal bush, only seven feet from the ground. Think of that, J. M. W., and others who esteem it nothing to toil up some tall chestnut tree seventy or eighty feet to secure a set of the common *Buteo borealis* or *lineatus*! These rare eggs could be lifted out of the nest by a tall man while standing on the ground.

Two eggs were the usual number found, although sometimes three are laid. The present set (which are in the cabinet of a gentleman in Philadelphia,) were perfectly identified, as both of the parent birds were shot. They were found in a nest made of sticks, and lined with short dry grass. The eggs exhibit almost no variation in size, one of them measuring 2.20 by 1.80, and the other 2.19 by 1.80. In appearance, however, they are quite different, as one is almost entirely unspotted, and the other faintly marked all over its surface with very light brown spots. The ground color in both is of a light greyish white, and the egg which is almost entirely unspotted has a few faint streaks of very light brown at the smaller end. The shell is exactly like that which is typical of *Buteo borealis*, and the shape is similar to the ordinary one for the latter bird.

It would be well if those who own sets of eggs of *Buteo albicaudatus* would send descriptions of them to THE ORNITHOLOGIST AND OOLOGIST for publication, in order that a comparison with those described above might be made.

The Number of Eggs Laid by Hawks and Owls.

The number of eggs laid by birds of the Order *Raptores* has been subject to more mis-statement than any others. The tendency seems to have been to exaggerate their number, rather than to understate it, though errors in this direction have been frequent. Thus the Great Horned Owl, (*Bubo virginianus*), is said by many writers to lay from three to six eggs, while the real number is only two or three; and it is doubtful if more than three have ever been found in one nest. The Swallow-tailed Kite, (*Elanoides forficatus*), never lays more than two eggs, but their number has been given for years as being from four to six. Coues states that the nest complement of eggs of the Caracara Eagle, (*Polyborus cheriway*), is two, but sets of three are as often met with as the former number. The Red-tailed Hawk (*Buteo borealis*) more commonly lays two than three eggs, yet Audubon stated that "the female lays four or five." The Broad-winged Hawk, (*Buteo pennsylvanicus*), usually lays three or four, sometimes only two, but their number is given as high as five by

some writers. The Red-shouldered Hawk, (*Buteo lineatus*), more commonly lays three than four eggs, never exceeding the latter number, and yet Audubon stated that they are sometimes five. The American Rough-legged Hawk, (*Archibuteo lagopus sancti-johannis*), is also credited with four or five eggs, while the former is believed to be the true number. These instances could be easily multiplied, but enough have been mentioned to show that mistakes as to the number of eggs of the *Raptores* have been very common.

The Eggs of the Swallow-tailed Kite.

Audubon was the first to describe the eggs of the Swallow-tailed Kite (*Elanoides forficatus*.) He tells us that "the nest is usually placed on the top branches of the tallest oak or pine tree, situated on the margin of a stream or pond. It resembles that of the Common Crow externally, being formed of dry sticks, intermixed with Spanish moss, and is lined with coarse grasses and a few feathers. The eggs are from four to six, of a greenish-white color, with a few irregular blotches of dark brown at the larger end." (Audubon's *Birds of America*, Vol. I, p. 80, Edition of 1840.) This statement has been followed by all writers down to the present day. Dr. Cones, in his *Birds of the Northwest*, quotes the above passage, without comment as to the strange mis-statement as to the number of eggs laid by this bird; and repeats the assertion, in the revised edition of his *Key*, that they lay from four to six.

An old and experienced oologist informs us that he has never heard of more than two being laid in one nest, and an experienced collector in Texas, who has found the eggs repeatedly, says that their number is always two. A fine set collected in Lavaca County, Texas, on April 20th, 1885, and now in the cabinet of a gentleman in Philadelphia, were fresh when taken. The identity was well proven, and the nest was placed on the side branches of a live oak tree. The eggs are two, and are smaller at one end than at the other. They are of a whitish color tinged with yellow and are marked with large blotches of rich chestnut brown. No. 1 measures 1.80 inches in length by 1.50 in breadth. No. 2 is 1.88 long, and 1.48 broad. In No. 1 the markings are at the smaller end, while in No. 2 they are clustered around the larger end. Dr. Cones gives their measurements as 1.90 by 1.50 in his *Birds of the Northwest*, basing them upon a single specimen then in the Smithsonian Institution collection, taken in Iowa. In his *Key* he gives the same measurements, but does not say whether he had other specimens to examine.

Two Species of Raptores Using the Same Nest.

The fondness that birds of the *Raptores* family have for their old nests is a well known fact, and also their habit of returning to them year after year; even in many instances, when deprived of their eggs. That the same nest should be used by two kinds of birds of prey each year is a new fact, however. Such, nevertheless, is the case with a very large nest of sticks, lined with a few feathers, and placed in the notch of a post-oak, about forty-five feet from the ground, in Lee County, Texas. This nest is used every year, first, by the Great Horned Owl, (*Bubo virginianus*), and afterwards by the Red-tailed Hawk, (*Buteo borealis*.) The young owls leave the nest before the hawk is ready to occupy it. It is not known whether the owl or the hawk originally built it, though both of them probably add to it each year, which would account for its large size.

Some Interesting Facts About the Nesting of the Cuckoo.

BY HARRY G. PARKER, CHESTER, PA.

Imagine a rank and luxuriant undergrowth where the grape, ivy and other climbing vines throw out their arms to form a bower, situated in an interesting valley formed by two gently sloping hills rising on either side, and through this damp little glen a small stream pursues its winding way. In such a place, remote from human habitation I was collecting on June 5th, of the past year, making my way on hands and knees, (for blackberry and thorny bushes abounded too,) listening to the songs of Yellow-breasted Chats, Maryland Yellow-throats, and other warblers, and wondering how their nests could elude me so successfully; when casting my eyes upward, I saw right above me a Black-billed Cuckoo on her nest, a critical and interested spectator of this some-time quadruped. She seemed tenacious indeed, of her maternal rights, and only left the nest when my hand was about to grasp her, so I was surprised to find, upon examination, that she was setting so hard upon only *one* egg. The nest was beautiful, and unusually substantial for a Cuckoo, being a platform of thorny sticks, rootlets, Elm catkins, blossoms, grasses and strips of grape-vine bark. I coveted this nest for my collection so much that I took it, and the egg also, not expecting to visit this locality again. On June 14th, (nine days later) I happened to be again in this neighborhood, and again went through this same thicket, but more in quest of

warblers than cuckoos. About fifty feet from the location of the former nest, I found another of the same species. It was much more loosely formed than the previous one, and it was placed higher on a wild grape-vine, or rather, where several of these vines intersected each other at a distance of about nine feet from the ground. The bird was more wary than the former one, and flew from her home while I was yet five yards distant, but not until I had positively identified her as the Black-billed species. This nest contained six eggs, which, as I found upon preparing them later, were in all stages of incubation. Two were on the point of being hatched, two others were partly incubated, and the remaining two were nearly fresh. As the number seemed to me to be excessive, I sought all the information I could upon the subject from the works of various writers, and in no case did I find a record of more than "four or five." Then I consulted a better medium than any published writings, namely: the personal experiences of collectors. Both in person, and by letter did I prosecute my inquiries, but none had ever found more than four eggs in a Black-billed Cuckoo's nest—two or three being more generally met with. So I came to the conclusion that I was fortunate in my exploit, if indeed my case was not unique, and I set about reasoning how these six eggs came there, and if the capture of the nest of the other bird in close proximity, on June 5th was not an important factor in the problem. I concluded that the bird who was deprived of her home in the first instance, had either surreptitiously deposited her unlaidd eggs in her neighbor's nest, or that she being hard pressed to lay, had made known her complaint to the last named, who had extended her hospitality to her stricken sister, as would seem to be the case, and thus brought joy and novelty to the heart of one oologist. Both the first nest and single egg, and the set of six eggs are now in my collection, and the writer would be pleased if these lines would cause some other collector to state his experience as to the complement of the Black-billed Cuckoo.

On the same day, June 14th, not more than one-quarter of a mile from the location spoken of I found a nest containing four eggs of the Yellow-billed Cuckoo, which must have been laid on succeeding days, as incubation was about equally advanced in all. The eggs of neither of these birds (being in no wise remarkable) need any description here, but I will always associate in my mind a certain damp, dark spot in Delaware County, Pennsylvania, with the two species of Cuckoo.

The Nest and Eggs of the Broad-winged Hawk.

BY HARRY G. PARKER, CHESTER, PENN.

One day in January while riding on horseback through Delaware County, my attention was suddenly arrested by seeing three hawks nailed up, belly outward, against the front of a well-to-do farmer's barn; probably as a warning to their fellows that this particular rustic was bound to protect his hens and pigeons at all odds. So unusual a sight prompted me to dismount and seek the acquaintance of the owner, and if possible gain some points concerning his winged foes. This man was only one of the vast army of countrymen who for years have waged an unceasing crusade against the detested birds known to them as "Hen and Chicken Hawks." So successful has been this warfare, that it is a miracle, almost, that any members of the *Raptors* are bold enough to choose their sites, build their homes, lay eggs and rear young amongst their relentless enemies. On May 2d, however, I saw a pair of Broad-winged Hawks, (*Buteo pennsylvanicus*), who showed unmistakably that they had a nest in the near neighborhood, and the lateness of the season only confirmed my belief that they intended breeding with us. As I knew of no authentic instance of the eggs of this species having been taken in Delaware County, and as I was more than anxious to add another species of hawk to my "personal collection" column, I sought at once in a systematic manner, their abode. A search of two hours revealed many nests, near the tree tops, any of which from a ground view might have been easily mistaken for the one I sought. After climbing several trees and peeping into as many Crow's nests, I was well nigh discouraged and fatigued; but when on the top of one of the tallest oaks in the wood I was in, I saw what I felt instinctively was the nest of the birds, who meanwhile remained perfectly passive spectators of my scansorial exercise. As the tree was a giant, and as night was coming on, and I was a long distance from home, I left the wood with the determination of returning on the morrow. By the aid of a man and a coil of heaving line, I was safely landed on the lowest limb of this oak on the afternoon of May 4th. It proved all that I had anticipated, and I looked for the first time into the nest of this stout little, ample-winged *Buteo*. At this date it was evidently just finished, and contained no eggs. It was exactly eighty-seven feet from the ground, in the forks of the oak, near its top, and was a well made and compact structure; first a foundation of fagots, twigs and leaves,

snugly and regularly lined with the bark of the red cedar. Altogether it did not look unlike certain Crow's nests which I can recall. During my ascent of the tree the birds manifested the liveliest concern, but in no wise interfered with me. I had come, with a stout box and plenty of cotton, a distance of eight miles, for the express purpose of taking home a set of eggs, and so I was correspondingly disappointed when I saw before me a newly-made and empty nest. However it only served to whet an eager oologist's desire, and on May 14th I returned. Again I attacked the sturdy tree, and again I slowly made my way up and around it. This time the birds both manifested a determined resistance, the female especially flying quite close to me as I approached the nest. We all have certain moments in our lives which stand out pre-eminently and remain forever associated with certain actions or exploits. This was one of mine when I leaned over, and saw the three beautiful eggs which it contained. The ground color of this set is a clear yellowish white, scarcely seen under the spots, blotches and scratches of reddish brown which cover the greater portion of the eggs. They measure 2.02×1.64 ; 2.00×1.62 , and 2.00×1.60 . Their clean appearance is due solely to the fact that they had not been sat on more than four or five days, as evidenced by their comparative freshness.

The tree from which I took this set was situated in a dense wood, in a solitary spot, and fully half a mile from the nearest house. This pair of hawks were the only ones occupying this spot, and the nest was undoubtedly newly made. Numberless Crows found suitable building places in the locality, and may have felt slighted at my discrimination in climbing to the nest of their nobler neighbor to the entire exclusion of their own.

This is the only set of eggs of *Buteo pennsylvanicus* which I have heard of being taken in Delaware County and I would gladly essay climbing a more difficult tree, and journey twice eight miles to duplicate the performance in any successive season. Another visit on June 2d showed the nest to have been deserted, and the *Buteos* to have left the neighborhood.

Blue Yellow-backed Warbler.—A Large Set.

A set of six eggs of *Parula americana*, was taken June 4, '85, being the only instance of my finding the above number in one set in ten years' collecting. Is it common to find as many as six in a set?—B. F. P.

ENTOMOLOGY.

WRIGHT & BATES,

73 Hanover St., Boston, Mass.,

ASSOCIATE EDITORS.

Address all communications for this department as above.

In inaugurating this department we respectfully call the attention of Entomologists to the necessity of making the study of the science so simple and attractive, that the young will be interested in it, and at the same time furnishing such information as will be beneficial to all. This shall be our aim, and we ask their kindly aid and encouragement in the undertaking.

Practical Entomology.

BY WRIGHT AND BATES, 73 HANOVER ST., BOSTON.

(Continued from page 172.)

RAISING LARVÆ.

One of the most important aids to the entomologist is the *Vivarium*. By this means the larvæ of many rare Lepidoptera may be fed until they transform, and the images obtained in a state of perfection which is impossible when captured with the net, and better still we are enabled to study the forms and changes of the insect in its various stages of existence. The *Breeding Cage* consists of a case, one or more sides being glass, with a door extending the entire length; the top should be covered with wire gauze to afford air to the inmates and still prevent them from escaping. In the bottom a zinc pan, four to six inches deep, filled with moist earth, is placed. In this earth a bottle or glass jar, filled with water and containing the food-plants, is fixed.

This cage admits air and light and also convenience for removing the grass and excrement. The size of the cage will of course be determined by the means of the owner and amount of room required, but it should not be less than two feet high to admit good-sized branches of the food-plant, as the larger they are the longer will they keep fresh. The insects in transforming will either enter the earth or attach themselves to various parts of the cage or food-plants.

To some convenient part of the cage should be affixed a memorandum showing the varieties contained and the food of each with some mark referring to the note-book, where a record should be kept of the name (or if unknown, a description), place and date of capture; the food-plant and amount eaten; length of larval state, date of birth if raised from the egg, and dates of transformations and moultings.

The objective point being to keep the larvæ from the direct rays of the sun, the food-plant fresh, and in fact to make all conditions as nearly like the natural as possible.

The breeding and raising of Coleoptera and in fact of all branches of the insect family, except Lepidoptera, is attended with much difficulty, and in many cases is almost impossible, it being very difficult to maintain natural conditions for the length of time required for the insect to go through its various changes, many varieties requiring from one to five years and often more. On account of these difficulties little is known of the methods required, the main points, however, should be to keep all conditions as nearly natural as possible.

SOFTENING DRIED SPECIMENS.

It often becomes necessary to mount specimens which, either purposely or otherwise, have become dry. In order to do this they must be relaxed or softened. This may be done by preparing a deep, earthen, covered dish with a layer of charcoal and sand and pouring upon it boiling water to destroy any animal life which may be present. This layer should be covered with a piece of thick paper or fine brass wire gauze upon which the insects are laid. The sand should be kept very wet. Twenty-four to forty-eight hours are sufficient to relax even the largest specimens.

Should it be necessary to do this more expeditiously, place the dish over a slow fire, care being taken that the water does not boil. In this manner the effect may be produced in a few hours.

If the insects become mouldy, they may be cleansed and the mould destroyed by applying, with a fine brush, a weak solution of camphor in alcohol.

PACKING AND SHIPPING.

Insects in papers may be packed in a box with a layer of cotton at top and bottom, and sent safely by any conveyance. Mounted specimens should be finely pinned in a cork-lined box, wrapped outside with a thick layer of cotton batting and covered with strong paper, or in case of a large number, pinned in small boxes and tightly packed in a larger box lined with cotton or excelsior. Coleoptera or Hemiptera are best transported by soaking in alcohol or Coleopteral and then packing in sawdust in a hermetically sealed box.

Collection of 60,000 Insects Burned.

BURLINGTON, Ia., Jan. 11.—The residence of the German naturalist, Charles Buettner, containing the finest collection of birds, insects and animals west of New York, was burned last night. It included a collection of 60,000 insects, which he purchased two years ago.

Cause of the Scarcity of Insects in 1884 and 1885.

Many inquiries have been made as to the reason of the scarcity of insects, especially Lepidoptera, in the above mentioned years. The year 1883 was extremely prolific in insect life, for example the *L. Ursula*, one of our most beautiful, and most variable butterflies was very plentiful. The Summer season was very warm, the Winter very late in making itself felt, the weather during the Winter very variable, and a warm, followed by an extremely cold period in the Spring. As a consequence the earlier Spring butterflies were numerous, but those of the Summer scarce, the variety mentioned above being conspicuous only by its rarity. The Winter '84-'85 was a reproduction of that of '83-'84, as late as April 2d the day being noted as very cold and stormy. During the following Summer the Lepidoptera were even scarcer than in the previous one.

Hence it undoubtedly follows that a warm, dry Spring will be followed by an abundance of insect life, and a wet, stormy one by the contrary, as many of the Hymenoptera are prevented from building their nests, and the larvæ and pupæ of other orders are so long delayed by the cold that they die before their transformation, and while a cold Winter does not necessarily prove fatal to insect life, a variable one or at least mild periods, when it is warm enough to cause them to arouse from their torpidity, followed by a change to severe cold, are as fatal, if not more so, to insects as to vegetation.

B.

[Correction.—In the article on Practical Entomology, (Nov., O. and O., page 170) in place of "convex reflector," read *concave* reflector etc. Ed.]

Brief Notes.

WHITE-RUMPED SHRIKE, (*Lanius ludovicianus excubitorides*.) Though by no means a common summer resident of this region, yet I had the good fortune to find two nests of this species during the past season. Both of these were placed in thick thorn bushes, in a large meadow, and were mainly constructed of grass, bark from the grape vine, roots, etc., and were warmly lined with wool, besides having an outer network of dead thorn-twigs, probably placed there for the better protection of the nests.

The first nest was found May 3d, and was about four feet from the ground. It contained a fine set of six fresh eggs, which were taken and are now in my cabinet. The parent birds were very bold, and declined leaving the bush, in which the nest was placed, until I had almost reached it. The second nest was within two hundred yards of the first one, and resembled it in general composition. It was found May 29th, and contained five fresh eggs. As this species is generally seen in pairs, and this was the only season during which I have seen birds of this variety at all, I am led to believe that both of the nests found belonged to the same pair of birds.—Geo. P. Elliott, Mercer, Pa.

BRISTOL COUNTY ORNITHOLOGICAL CLUB.—A number of gentlemen interested in the study of Bird Life, assembled at the residence of Mr. F. H. Carpenter, at Rehoboth, Mass., on December 24, 1885, and formed an association for conjointly observing the Ornithological phenomena of Bristol County, Mass. Mr. Chas. H. Andros, of Taunton, Mass., as chairman called the meeting to order. Mr. Carpenter presented a form of constitution and by-laws, which after some deliberation was accepted. It was voted that the association be called The Bristol County Ornithological Club, its membership to be limited. Frederick M. Merck, of Attleboro Falls, was elected President, and Mr. F. W. Andros, of Taunton, Secretary. Hilton B. Reid, C. H. Andros and F. H. Carpenter were chosen a committee to arrange a system of observance on migration.—F. W. A.

A HYBRID DUCK. I purchased in the Chicago market a fine specimen of a duck which was very evidently a hybrid betwixt the common Mallard, (*Anas boschas*), and the black Mallard, (*Anas obscura*.) It was shot at Fountain Bluff, Ill., and shipped here with a large quantity of other ducks. The hybrid has the top of the head the characteristic green of the common Mallard, whereas the balance of the head and neck are marked similarly to the ordinary black Mallard, and the body has the coloring of both species about evenly divided. This is the first hybrid of the kind I have met with. Hybrids betwixt the Mallard, (*Anas boschas*), and the Pintail, (*Dafila acuta*), are not very infrequent. I have three such hybrids in my collection, and have seen several others.—G. Frear Morcom in *American Field*.

CONTINUED LAYING OF THE FLICKER. May 6, '83, I discovered in a hole two eggs of the Golden-winged Woodpecker. I took one, leaving the other as a nest egg, and continued to do so day after day, until she had laid seventy-one eggs. The bird rested one day when she had laid thirty-six eggs, and another when she had laid fifty-three eggs, thus taking her seventy-three days to lay the seventy-one eggs. I have the whole set in my collection. Has any one ever heard of as large a number of eggs being taken from one bird?

ALBINO ROBIN. Oct. 21, '85, I had a white Robin sent to me. It had the red breast, but all the other parts were white, tinged with yellow above.—Chas. E. Phillips, *Dighton, Mass.*

THE KILLDEER PLOVER. This bird is a common summer resident with us, arriving early in April and remains until most of our feathered tribe have sought warmer climes. In this locality it generally resorts to low wet pasture land, but occasionally is seen on the upland, especially in the "tussock" grass. It sometimes prefers to breed on higher ground. I found one nest last spring, May 23, in a pasture well up on high ground. The nest was placed against the roots of a dead Elm stump, and was composed of loose material, such as dead grass and stalks and twigs. After the manner of the Spotted Sandpiper, the nest contained three eggs, which were to my eye, the same in color and marking as those of the "Tipup," excepting they were larger. These Plover prefer to fly on rainy or wet days, and are hard to approach at such times, as they are shy and easily take wing. Many times when the water clouds darkened the heavens have I heard the Killdeer far up in the air uttering its plaintive cry. In the fall they resort to plowed fields and stubble, where they feed. On the discovery of its nest it endeavors to decoy away the intruder by feigning lameness, taking the inexperienced collector away from its home.—Benj. P. Hess, *Phoenix, N. Y.*

BLACK GUILLEMOT, (*Uria grylle*.) A specimen of the above was shot in Narragansett Bay, near Bullock's Point, R. I., by Mr. S. W. Thayer of Pawtucket, and sent to me. This is the only one of this species I have seen from that locality.—F. B. W.

BARNACLE GOOSE, (*Bernicla leucopsis*.) A Barnacle Goose was shot November 1, '85, at North Chatham, Mass., and mounted by N. Vickary.

GOSHAWK, (*Astur atricapillus*.) Mr. F. W. Kendall, of Bridgewater, Mass., reports a specimen of the Goshawk taken Nov. 30, '85, and says it is his first record for that locality of that species for fifteen years. Report has been received of another capture of the above at Taunton, Mass., in December, '85; an adult.

THE OCCURRENCE OF THE SEA DOVE AT REHOBOTH, MASS.—A specimen of the Sea Dove, (*Alle nigricans*) was shot in a small fresh water pond about a quarter of a mile from my house, on November 25, 1885. Probably the storm of the previous days had blown the little fellow inland from his usual habitat. This is the first occurrence I have noted of this species at this place, but several hunters assert that during a severe winter several years ago the "Little Auks were quite frequently shot." They were, I presume, this species, as it is not very uncommon for them to occur inland during boisterous weather.—F. H. C.

ANOTHER OCCURRENCE OF THE DOVEKIE INLAND.—Mr. E. A. Capen, of Canton, Mass., writes that he captured alive a fine specimen of the Dovekie at the above locality on November 26, 1885. The close proximity of the two dates of capture would more strongly indicate the reason of their occurring inland being due to the violent storm on the coast just previous to the above dates.

CORRESPONDENCE.

ORNITHOLOGY AND ENTOMOLOGY.

Editor O. and O.—Sir: Noticing you have embraced in this magazine, the science of Entomology, allow me to suggest some methods I have pursued in combining the two studies of Ornithology and Entomology. Not being an enthusiast in the latter science, I confined myself to observing what insects I find upon dissection of my ornithological specimens and noting down the variety; then devoting some little time to collecting such in the field in perfect condition, I preserve them and thus have a cabinet illustrative of the food of birds; of course, labeling them—beside the name of the insect—with a reference number duplicated in a book, giving a list of the birds in whose stomachs it, or rather its species, has been found.

Have noticed as a fact that the different species of birds feed principally upon distinct varieties of insects, showing one of Nature's great laws in the restriction of a too great abundance of life. Another interesting phenomenon to observe, is to note what varieties of insects are unusually abundant in a locality, and in connection also, what species of birds are more common than at other times. There may be a few obstinate examples, like the Potato Beetle, and Kansas Grasshopper, which, in company with the "Johnny Bull" Sparrows, should be transported to stock the undiscovered continent of the North Pole.—J. R. C.

APOLOGY.—As this magazine did not come under the supervision of the present editor until the latter part of the previous month, and as the manuscript for publication was not received until fully a week later, this number is delayed by circumstances beyond his control.

RECEIVED.—A. L. Brown, Walter Hoxie, H. H. Brinley, Geo. P. Elliott, W. Otto Emerson, F. M. Merck, A. M. Ingersoll, Philo W. Smith, E. M. Hasbrouck, George H. Center, Harry G. Parker.

We thank our friends who have favored us with their contributions, and hope they will bear kindly with the delay of the appearance of their articles.

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BOSTON, MASS., FEBRUARY, 1886.

No. 2.

Florida Bird Life in November, 1885.

BY A. L. BROWNE, ORLANDO, FLA.

Mockingbird, (*Mimus polyglottus*). Abundant. Distributed about equally, in orange groves and pine woods, but not so plenty in the hummocks (hard wooded lands). They were in song somewhat, at the beginning of the month, but grew rapidly silent, and by the middle were rarely seen.

Catbird, (*Galeoscoptes carolinensis*). Plenty. Frequents the low hummocks, usually keeping well hidden in the most dense portions. More often heard than seen.

Bluebird, (*Sialia sialis*). Very abundant all through the pine woods, frequently in company with the flocks of Red-poll Warblers. They are almost silent, their only note being a soft call.

Blue-gray Gnatcatcher, (*Poliophtila cerulea*). Plenty; most so during the last of the month. Usually found in small flocks in the hummocks, but saw a few at different times in an orange grove.

Tufted Titmouse, (*Lophophanes bicolor*). Plenty, but are not often seen, on account of their frequenting the interior of swamps. Occasionally pay a short visit to the pines near by.

Carolina Chickadee, (*Parus carolinensis*). Found a few in company with the last.

White-bellied Nuthatch, (*Sitta carolinensis*). Not plenty. Saw a pair on the 2d, and one on the 25th, running about the trunks of pine trees.

Brown-headed Nuthatch, (*Sitta pusilla*). Abundant in the pine woods.

House Wren, (*Troglodytes aedon*). Very abundant. Found alike in orange groves and woodland. In the latter, has a liking for the thick clumps of scrub palmettos, into the depths of which they dive with much scolding and haste on one's approach.

American Titlark, (*Anthus ludovicianus*). First saw a flock on the 20th, near the edge of the city, and they remained there during the rest of the month. Saw a flock on the 23d, flying over a grove.

Yellow-rumped Warbler, (*Dendroica coronata*). Plenty the last of the month. First saw them in the pine woods on the 23d, in company with Red-poll Warblers. Afterwards, generally found in a hummock, bordering on a lake.

Red-poll Warbler, (*Dendroica palmarum*). Exceedingly abundant. Found in nearly all situations. Large flocks in the pine woods, usually accompanied by other species.

Maryland Yellow-throat, (*Geothlypis trichas*). Plenty about the hummock, but I saw no female.

Loggerhead Shrike, (*Lanius ludovicianus*). Abundant in orange groves and pine woods. Most plentiful in the former.

White-bellied Swallow, (*Tachycineta bicolor*). Abundant, but seen only on warm, sunny days. Seems to prefer the lakes and orange groves.

Yellowbird, (*Astragalinus tristis*). First heard one on the 18th, in the pines. Saw three on the 21st in an orange grove, and heard them at intervals during the rest of the month in the pines.

Savannah Sparrow, (*Passerculus sandwichensis savanna*). The last of the month they were plenty, with flocks of Red-poll Warblers and Chipping Sparrows. Found a few in a grassy orange grove.

Grass Finch, (*Pooecetes gramineus*). Found quite frequently during the latter part of the month, in and near orange groves and various grassy places by the woods.

Chipping Sparrow, (*Spizella domestica*). First saw them in the pine woods on the 23d, associated with Red-poll Warblers, and found them abundant there during the rest of the month in company with those birds.

Chewink, (*Pipilo erythrophthalmus*). Very abundant in the hummocks, their notes being the most common bird sound in those localities.

Florida Chewink, (*Pipilo erythrophthalmus allenii*). Saw this bird in same places as last, but it does not seem so plenty.

Cardinal Grosbeak, (*Cardinalis virginianus*). Not common. In one orange grove I usually found from one to three and saw a male on the 18th, and a female on the 26th, in a hummock.

Meadow Lark, (*Sturnella magna*). Plenty amidst the grass in the pine woods.

Blue Jay, (*Cyanocitta cristata*). Very abundant; preferring pine woods in the neighborhood of oaks, on the acorns of which they feed largely.

Pewee, (*Sayornis fuscus*). Abundant in orange groves and pine woods.

Red-cockaded Woodpecker, (*Picus querulus*). First saw a pair on the 18th, and afterwards found them plenty on the pines. Usually seen in pairs.

Red-bellied Woodpecker, (*Centurus carolinus*). Not common. Saw one on the 17th and again on the 25th; both in a hummock.

Yellow-shafted Flicker, (*Colaptes auratus*). Often found in the pine woods.

Belted Kingfisher, (*Ceryle alcyon*). Plenty about the lakes.

Marsh Hawk, (*Circus hudsonius*). Saw three during the month, sailing about over orange groves and lake shores.

Turkey Buzzard, (*Cathartes aura*), and Black Vulture, (*Catharista atrata*). Constant features in all localities.

Turtle Dove, (*Zenaidura carolinensis*). Unusually scarce. Saw several solitary individuals during the month, and a small flock in an orange grove on the 28th.

Ground Dove, (*Chamaepelia passerina*). Abundant; frequenting orange groves and their vicinity in small flocks.

Quail, (*Ortyx virginiana*). Saw a flock of about a dozen in the pine woods on the 28th, (may have been the Florida variety.) They are undoubtedly plenty, but it was my fortune to meet with only these.

Green Heron, (*Butorides virescens*). Saw one on the 18th, by a lake in which, judging from his appearance, he had been taking a bath.

Killdeer Plover, (*Oxyechus vociferus*). Abundant; frequenting mostly muddy spots, ditches and the vicinity of lakes.

Pied-billed Grebe, (*Podilymbus podiceps*). Shot a male on the 5th, in the grassy border of a lake.

Peculiar Plumage of the Bluebird.

While collecting in Baltimore County last March, I shot a specimen of the common Bluebird in a very remarkable and beautiful plumage. The throat, breast and under parts were as in the common form, but the entire upper parts were a light azure-blue, paler on the head and brightest on the rump, with an intense greenish reflection in certain lights. Except that it was a little paler, the color was exactly like that of the Rocky Mountain Bluebird.—A. H. Jennings, Baltimore, Maryland.

OÖLOGY.

J. PARKER NORRIS, Editor.

The Editor assumes no responsibility for those articles which have the names of the writer attached.

In *The Oölogist* for January and February, (bi-monthly, Albion, N. Y.,) Mr. Harry G. Parker writes pleasantly of a trip he took to Chester Island, last season, where he found the Long-billed Marsh Wren, (*Telmatorhytes palustris*), breeding in great numbers. Such was their abundance that he secured a hundred sets of eggs in a single day. He found that the usual number of eggs in a set was six, though many nests contained only five, (incubated), and in several there were seven and eight. Only one nest contained nine, which was the largest number found. His visit was on June 15th.

The same journal also prints papers on "The Birds of Cortland County, N. Y., by M. D. M.; on "The Nest of the Black and White Creeper," by Wm. R. Kells; and on the "Summer Birds about Washington, D. C.," by J. H. Langille, etc.

Large Number of Eggs of the Black-billed Cuckoo.

In *THE ORNITHOLOGIST AND OÖLOGIST* for January, 1886, Mr. Harry G. Parker contributed a very interesting paper on this subject, and mentioned having found six eggs of this species, (*Coccyzus erythrophthalmus*), in one nest. Mr. Parker speaks of his experience as probably being unique, but on referring to the file of the *O.* and *O.* for 1884, it appears that Mr. C. O. Tracy, of Taftsville, Vt., described a nest of this bird which contained three young birds and three eggs.—*Ornithologist and Oölogist for February, 1884, Vol. IX, p. 17.*

Relative Size and Number of Eggs.

In 1857, in his *North American Oölogy*, Part I, p. 5, Dr. Brewer remarked that "the length of a bird cannot always be taken as a safe guide in determining the probable size of its egg. Much depends upon the shape and relative capacity of the pelvis, and much also upon the degree of development possessed by the young bird when first hatched. Birds whose young are hatched in an advanced stage of maturity, and can shift for themselves from the egg, like many species of shore birds, the Urie and others, have invariably proportionately very large eggs, and *vice versa* except only where the female deposits a large

number, as in the case of the Wild Turkey, the Virginian Quail, the Ruffed Grouse, and many others."

This is very true, and accounts for the disproportionate size of the eggs of all Plovers, Snipe, and others of the *Limicole* order; but what explanation is to be given of the general rule that the smaller the bird the greater is the number of its eggs? The notable exception of the Hummingbirds will at once occur to every one which only lay two eggs; but Titmice and Chickadees, (*Paridae*), the Nuthatches, (*Sittidae*), the Wrens, (*Troglodytidae*), etc., carry out the general truth of this assertion. One would naturally suppose that large and powerful birds, like many of the *Raptores* are, would raise and provide for a numerous family, but such is by no means the case. The rule stated above as to the relative size of the bird to the number of its eggs, holds good as to them also. When one finds a big Red-tailed Hawk (*Buteo borealis*), sitting on its two or three eggs one cannot help wondering why it is that their number is so few, when the little House Wren, (*Troglodytes aedon*), is not contented with less than three times the number? Certainly the hawk could better provide for seven or eight young ones than the wren. Why is it that the hawk often lays only two eggs?

The Proper Arrangement of a Collection of Eggs.

This is a subject which has probably caused many of the readers of THE ORNITHOLOGIST AND OOLOGIST considerable thought, and about which there is much diversity of opinion. That eggs are best kept in closely fitting drawers, away from the light, every one will admit, but whether the drawers should be divided by wooden partitions or not is a much debated subject. Some collectors advise that the spaces made by the wooden partitions should be filled with cotton, and others with grated cork or sawdust. The two latter are objectionable on account of their weight in large quantities, and also because they will find their way into the eggs through the holes by which they are blown. Therefore if the drawers are divided by wooden partitions the spaces had better be filled with raw cotton, and enough should be put in to bring the eggs near the top of the drawer. The great disadvantage in this method of arranging a collection, however, is the danger and trouble occasioned by the frequent moving of the sets of eggs, (if not kept in the original nests), which is necessitated by the constant acquisition of new clutches or new species. It is true that it has often been attempted

to avoid this moving of eggs by leaving empty spaces for the new acquisitions, but apart from the bad effect produced by this plan, it will be found ineffectual. No one can calculate in advance just what space he will require to meet the needs of a growing collection.

The writer therefore strongly advocates the employment of paste-board trays to hold the eggs in the drawers—one for each set. They should all be of a uniform height—and half an inch has been found to answer admirably for all eggs from the smallest to the largest—but can be made of a sufficient variety of sizes to accommodate their contents. Here one of their greatest advantages is at once apparent—they waste no room. A drawer with the eggs arranged in trays will hold two or three times the number of sets that can be accommodated in one that is divided by wooden partitions. Then, too, consider the ease with which the trays can be shifted from place to place in the drawer as the collection increases in size, and also from drawer to drawer. One who has once employed trays would never be willing to go back to partitions.

The trays should have a piece of sheet raw cotton (very thin) cut the exact size of the bottom. This will keep all but large eggs from rolling about when the drawer is moved, and in the case of large ones, fluffs of raw cotton put between the eggs will keep them in position. Underneath the raw cotton on the bottom of the tray should be placed a small paper label, or data blank, about 1.85 by .85, on which the data can be copied—using the back of the label for the name of the species, details as to nest, etc. The original data are generally too large to put in the tray with the eggs, and are conveniently kept in a box by themselves, arranged in their proper order, (by numbers) and thus can be easily referred to.

It is not advisable to keep the nests in the drawers with the eggs, because many of them are infested with insects or their larvæ; and no satisfactory way of ridding them of these pests has been discovered. Let them be kept in a cabinet by themselves.

Strips of wood, half an inch square, and long enough to extend from the front to the back of the drawers, will be found convenient for keeping the trays in line; and printed labels containing the name of the species can be pasted on small blocks of wood, having the front bevelled at the top. The latter will be found very convenient to label the collection, and are easily moved from place to place.

The depth and size of the drawers are of course matters of taste, but a uniform depth (outside measurement) of four inches, and a width

of thirty inches, by twenty-four from front to back, has been found by the present writer a very convenient size. Drawers of different depths prove very annoying when the growth of a collection requires the shifting of the large eggs into those which were originally calculated for small ones. It is better therefore to have all the drawers four inches deep, even if a little space is wasted. The additional depth is also a great protection against breakage of small eggs.

In considering the advantages of arranging eggs in trays no account has been taken of the great convenience it is to be able to remove the trays with the specimens in them to the study table. This alone should decide the student to adopt this plan. Nothing has been said above about the order in which the species are to be kept, as it is presumed that Mr. Ridgway's nomenclature and arrangement will be followed, or else that of Dr. Coues. Any one who arranges his collection in a manner which does not follow a scientific classification, is unworthy of having advice given him.

The Best Manner of Measuring Eggs.

In one of the numbers of THE ORNITHOLOGIST AND OOLOGIST some one informed us that the most convenient way of measuring eggs was to take some soft, damp sand, and press them in it until half covered by it. (In the case of delicate eggs it was recommended that a hollow should first be made in the sand with the finger to avoid breaking them.) The mould made by the egg could then be measured with a flat rule. This is both a primitive and a dangerous method, and one which cannot be too strongly condemned. Imagine the feelings of the owner of some rare set of eggs like those of the Swallow-tailed Kite, (*Elanoides forficatus*), if he cracked the shell of one of them while thus pressing it in the damp sand!

The only safe and accurate way to measure eggs is with a pair of steel calipers. Those made by Darling, Brown and Sharpe, of Providence, Rhode Island, have been found very convenient and accurate. They are divided into hundredths of an inch, (the scale in almost universal use for eggs in this country,) and are simple in their construction.

Placing the egg on a large pasteboard tray, the bottom of which is covered with a thin and flat piece of raw cotton to prevent rolling, the sliding arm of the calipers is moved along to a distance great enough to include the length of the egg. The delicate adjustment is then made by turning the little wheel which controls the movement of the sliding arm until the exact length is ascer-

tained. Care must be used, however, not to make the adjustment of the sliding arm too tight, as accidents to the eggs, especially if thin-shelled, would be the result of this. The best way is to make it just near enough to allow the calipers to move slowly up and down and just graze the shell. The width of the egg must be taken at its widest point, and can be done in a similar manner. The writer has measured a great many rare and valuable eggs by this method without a single mishap.

Calipers which work on a pivot at the top are not accurate enough, and also do not allow the full length or breadth of larger eggs to be taken. The want of the accurate adjustment by means of the wheel is also a fatal objection to them.

A Large Collection of Eggs.

What is probably the largest private collection of eggs in the world is in possession of Mr. William Stoate, of Wembdon, Bridgewater, England. The catalogue of this famous collection, issued in 1884, contains 2,154 species, and embraces eggs from all parts of the world. In turning over its pages one cannot but wonder how so many species could be acquired by one person; and the patience, skill and perseverance requisite must have been astonishing.

Some idea of its completeness may be gained from the fact that the eggs of the order *Raptores* alone number 131 species, and they include those of many very rare birds. Mr. Stoate has been especially fortunate in obtaining many very rare American species, and those alone would form a most valuable collection.

Eggs of the St. Lucas Cactus Wren.

Dr. Coues, in his *Key*, p. 275, after describing the eggs of the ordinary Cactus Wren, (*Campylorhynchus brunneicapillus*), as "about 6, 1.00x0.86, white, uniformly and minutely dotted with salmon color," says of those of the St. Lucas Cactus Wren, (*Campylorhynchus affinis*), "nest and eggs as before"—meaning that the description of those of *C. brunneicapillus* would apply to those of *C. affinis* equally well. This statement is also borne out by the experience of Mr. W. Otto Emerson, of Haywards, California, who declares that the eggs of both species are entirely similar. The writer has examined a number of sets of eggs of both of these birds, and does not find this to be the case with the series before him. Those of the *C. brunneicapillus* are as Dr. Coues describes them, though varying considerably both as to length and breadth; but the eggs of *C. affinis* are generally longer, and the ground color is much

more prominent, owing to the fewer number of the spots—which latter instead of being of such minute size and great number as to almost entirely obscure the ground color, are larger and further apart—inclining in almost all cases to become confluent at the larger end. The spots are also of a more reddish tinge than those of *C. brunneicapillus*, which are of a true salmon color—though varying in intensity in different specimens. This gives the eggs of *C. affinis* an entirely different appearance from those of its allied species. They have a creamy-whitish ground color, spotted, as before stated, with reddish, while those of *C. brunneicapillus* appear at a first glance to be entirely of a salmon tint. It would be interesting to know if the foregoing observations correspond with the experience of others possessing sets of these beautiful eggs.

Nesting Habits and Egg of Ashy Petrel.

(*Cymochorea hutchinsii*.)

BY A. M. INGERSOLL, SANTA CRUZ, CALIFORNIA.

On June 14, 1885, at South Farallone Island, Pacific ocean, Mr. W. O. Emerson and I had about finished collecting eggs for the day, when noticing a number of Pigeon Guillemots, (*Uria lomba*), flying to and from holes among rocks a short distance from our quarters on the island, we concluded to search for their eggs before sitting down to our evening's work of preparing specimens. We had gone but a few rods, when I saw, under a fallen rock, what I supposed in the dim light of its retreat to be an Auk, but on reaching under the stone and removing the bird I was greatly surprised to find I held the first and only live Petrel I had ever seen. On showing my prize to one of the Italian egggers, he exclaimed, "Why, that's the first *Sicallor* I've seen in two years."

The egg which the bird was so carefully guarding as to allow herself to be taken, was but slightly incubated. It is dull creamy white in color, with a circle of reddish dottings so fine as to be almost indistinct, around the large end—which is somewhat flattened like the large end of an acorn. It measures 1.18x.94 inches, and was laid on bare rock, in a natural hollow formed by a large rock falling in such a way as to leave an irregular cavity two or more feet in diameter by nine or ten inches in its greatest height. The egg was to one side of the centre of the cavity, and about fifteen inches from the entrance, which was too small to admit my arm until a number of stones were removed. On examining the cavity more thoroughly the next day, I found,

hidden in a crevice near the top of the highest part, an old Rock Wren's nest, (*Salpinctes obsoletus*) containing one dead and dried up young bird. On the 15th one of the egggers brought us an egg, supposed to be an Ashy Petrel, which he found on the bare exposed rocks of the island. Mr. Emerson remained at the Farallones several weeks after I returned, and succeeded in also finding an egg and bird of the above species. I believe these three are the only eggs of this extremely rare bird that have ever been collected.

The Eggs of the Sparrow Hawk.

In 1857, when Dr. Brewer published the first (and only) part of his *North American Oology* he gave figures of four eggs of the Sparrow Hawk (*Tinnunculus sparverius*), which are comparatively very little spotted. One of them (represented in Plate II, figure 15a,) he calls especial attention to "on account of its well-defined markings, and the unusual depth and distinctness of the colors." This is a very curious statement, as the egg in question has not a tenth part of the quantity of markings which are quite common on the eggs of this bird. Out of a large series before the present writer, three-fourths of them exhibit much richer and heavier coloring. Especially is this the case with a number of those eggs which come from California. Many of them are so heavily marked with reddish that the whole of the larger end is covered, while in others the markings form a belt or zone which is sometimes around the smaller end, but generally near the greater. Again, in other specimens from Pennsylvania and California, the whole of the ground color is so profusely covered with very minute specks of reddish color that the general effect is almost as if it were all reddish.

Dr. Brewer must have had very light colored specimens before him when he made the statement quoted above.

Egg of the Yellow-Nosed Albatross.

(*Diomedea culminata*.)

BY W. OTTO EMERSON, HAYWARDS, CAL.

I have received an egg of the above named species during the past season, and thinking it would be interesting to the readers of the ORNITHOLOGIST AND OOLOGIST to have a description of it, I herewith give it. It was collected January 12, 1880, by Captain Thos. Lynch, at Diegos, Kaven's Rocks, S. by E., fifty-two miles from Cape Horn. The nest was composed on the outside of tussocks of grass and mud, inside of fine grass

and feathers. The diameter outside at the top was twelve inches, and at the base eighteen. Inside it was ten inches, and the depth inside was five inches. It was situated on the top of the rocks, on a loamy plain. The incubation was fresh. The following notes by J. W. Detmiller, M. D., were on the back of the data: "The nests are very nicely and solidly built, lasting two or three seasons, even in that fearful climate. They are built very closely together, and are probably often mistaken, by one and another of the birds, after the fashion of many sea birds. The nests are high, to enable the long-winged creatures to rise easily to wing, which they cannot do on a level. The birds are very tame, allowing themselves to be handled while sitting."

The egg now before me measures 4.68x2.68 inches, and is of an oblong form, smaller at one end than the other. Both ends are quite blunt. The surface of the shell is in character like a common hen's egg. The color inclines to a light creamy white, with a ring of seemingly fine spattered burnt sienna specks or spots, like those made by drawing a brush of color across a stick, as a painter does to get the effect of granite. They form a ring around the larger end, being about two inches across from one side of the ring to the other. The centre of the ring runs together in the fine markings, making the color almost solid and fades away from the outer edge of the egg, almost to needles points.

Dr. J. G. Cooper says this species is a rare visitant on the Pacific coast. He has, however, seen a skin answering to the description of this species in the Academy of Natural Science in San Francisco, California. It was made by Dr. W. A. Ayers, from a dead specimen, washed up on the outer beach near the Golden Gate.

I found the following description of a person who had paid a visit to the Albatross home, in a San Francisco newspaper. I give it in his own words:

"One day, when I was at the Auckland Islands, a group situated in latitude 51° south, and longitude 166 east, I had an unexpected opportunity of securing to myself that great privilege of a visit to their private home circle. A large party of us landed at Port Ross, and, starting under the guidance of an aged chief named Malionri, arrived in due time at a secluded and densely wooded valley, which opened to the sandy shore of a deep bay. We had this to cross. Facing us was a lofty hill, clothed to the top with shrubs and trees of a stunted growth. By the aid of roots and branches we continued to scramble up, and at last emerged from the abyss of shrubs we had been traversing, and stood breathless upon a piece of

tableland that jutted into the sea. Not a tree or shrub was to be seen, the only vegetation being a stunted sort of tussock of grass. But we were at the Bird Village, and to our great delight found the inhabitants at home. We had arrived during the season of incubation. Each nest was occupied by the hen bird, and close by stood her mate—a loving guardian. Nothing could induce her to leave the nest. She would look at us imploringly if we came near, and express her objection to our visit by a harsh snapping of the beak, but she bided her egg. The male at the same time made a slight show of resistance, and then, with uncouth gait and a spasmodic action of the wings, waddled away to the cliff.

"The nests were quite simple in their construction. Each of them was made by pressing down a clump of grass into the form of a shallow bowl, in depth and circumference not much larger than a soup-plate. I take it for granted that the female only lays one egg. Indeed, the little nest, which the breast of the bird covers and overlaps, could not hold more. Well trodden Albatross roads intersect each other in the village, and the birds high-road led from the nest to the edge of the cliff, whence they cast themselves forth on the wing. It seemed to us also that there was an attention paid to regularity in placing the nests in a line or street, so that one main path might communicate with them all."

A Day in Chatville.

BY HARRY G. PARKER, CHESTER, PA.

The eggs of the Yellow-breasted Chat, (*Icteria virens*), have always appeared to my eye to be among the most beautiful laid by any species breeding in our midst. Apart from the beauty of a normal specimen, they are possessed of difference so varied, both in size and markings, that few oölogists are aware of, unless they have had the privilege of examining a large number of sets at one time. Now as this species was only represented in my cabinet by one set, and that collected by a friend, the idea of taking a number of sets came up before my mind on just such a stormy, wintry night as the thoughts of the naturalist love to dwell on the memory of green fields and babbling brooks. Seated before a cosy grate fire in my study, in slippered feet, with additional comfort lent by the indulgence of a pipe, I bid defiance to the elements without, and projected a trip for the coming season to a spot not more than twenty miles from Philadelphia, which is admirably adapted by nature to the nidification of this bird. I sat long, and mused and wondered whether the place I had in view would prove as

good a collecting ground as it did when I first took up my oölogical studies as a boy.

Spring came all too soon, and on the evening of May 29th, 1885, I left home, and after a ride across country of ten miles, put up for the night at a modest country Inn (a relic of Colonial times) to be near my ground by daylight next morning. Years had failed to make any changes in the place I sought. Picture to yourself an elevated plateau, miles in extent, and barren for the most part of trees, thickly covered as far as the eye could reach with viny and briery thickets, laurel, and a small species of evergreen. Here and there a mountain stream relieved the unbroken level as it went tumbling on its noisy way to meet the river Delaware some miles below. All this bordered on the north by heavy forest, presenting an upland with southern exposure. The hundreds of ancient and mossclad stumps of trees alone bespoke civilization and the deadly work of the woodman's axe of some former day. A veritable haven for Chats it proved, and between 5 a. m. and noon I had taken twenty-two sets, besides some other species not to be recorded here. By 4 p. m. I had completed a day's collecting with an additional fourteen sets, making a total of thirty-six sets of Chats alone.

Of the total number of sets collected on this day, I have selected eight from my cabinet which show nearly every phase of variation. I take up the sets for description as they now appear before me.

Set No. 1.—Four eggs of crystalline whiteness covered uniformly all over with minute spot of reddish brown, no spot exceeding in size the point of a pin, no lilac shell markings. Measurements .88x.68, .88x.66, .86x.64 and .85x.65.

Set No. 2.—Consists of four eggs which measure respectively .90x.68, 90x67, .88x.68 and .87x.63. Underground white. The general appearance of this set is ringed, formed of large splashes or blotches of two shades of red, similar to the markings on a heavily colored set of Meadow Lark's. The entire end and top are covered with these, which are confluent. The remainder of the egg is here and there sparingly spotted with minute spots of same color.

Set No. 3.—Four eggs, having an underground of highly polished white, similar to Yellow-shafted Flicker's eggs, and the entire portion of three eggs is covered with a heavy marbled pattern in red, much like the mottling of Nighthawk's eggs. The remaining egg is very peculiar, and looks out of place in this set, having a ring of reddish brown spots around the *smallest* end, the remaining portion being the shining white. Measurements average .92x.66.

Set No. 4.—Four eggs shaped like peanuts, faintly marked all over with the usual colored spot. The lilac shell marks show plainly. This set contained one egg of Cowbird. They measure 1.03x.58, 1.01x.56, 1.01x.55 and 1.00x.55.

Set No. 5.—Contained four eggs, the most beautiful of my day's work. Ground color a pure dead white and ringed around the larger end in innumerable spots of the brightest red. If an artist should take in hand a set of eggs of Purple Martin, and very delicately effect a wreath around the larger end, they would look as much like the set I am trying to describe as anything I can think of. Fully four-fifths of each egg is pure white, unspotted. These specimens measure .94x.66, .93x.66, .92x.65 and .92x.62.

Set No. 6.—Four eggs and Cowbird's egg. This set looks much like a set of Spurred Towhee, which were collected and presented to me by my friend W. Otto Emerson, of California. The entire egg is covered with dull markings. Sizes: .96x.72, .92x.70, .94x.69 and .90x.68.

Set No. 7.—Four eggs pure white. The lilac and reddish markings are about equally numerous. They are dispersed over the entire surface. Very glistening and pretty. One egg of the Cowbird was found in this nest. Average measurement: .90x.68. The eggs look like some sets of Golden-crowned Thrush, (*Siurus auricapillus*).

Set No. 8.—Four remarkably small, palcly marked specimens. Nearly round, .71x.68. These little eggs have the appearance of having been dipped in an acid which would remove the color of the marking. They might be termed albinos.

I am convinced that four eggs is the usual nest complement, as this is the most I found. The eggs at this date was mostly fresh, although I saw one nest with young birds, and several with one, two, or three eggs, which I did not disturb. No nest was more than five feet from the ground, and all were built in bramble or low thickets, except one which was on a small tree. Several were within one foot of the ground, and on an average every fourth nest contained the egg of the Cowbird.

The normal nest is long and thick; very compact, and I think it quite a pretty bird home. It is composed of leaves, strips of wild grape vine bark, and dead grass. One beautiful specimen I found was made entirely of dead beach leaves, with a plentiful lining of straw.

Probably few collectors in this locality have any idea of the excessive abundance of this bird in suitable places; and the fact that I found such a large number of nests in one day, and all within a radius of a mile, proves that the Chat loves an upland solitude, and that he finds much pleasure in the society of his relatives.

THE ORNITHOLOGIST

—AND—
OÖLOGIST.

A MONTHLY MAGAZINE OF
NATURAL HISTORY,

ESPECIALLY DEVOTED TO THE STUDY OF

BIRDS,

THEIR NESTS AND EGGS.

DESIGNED AS A MEANS FOR THE INTERCHANGE OF NOTES
AND OBSERVATIONS ON BIRD AND INSECT LIFE.

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Editorial.

We insert a letter from a gentleman of long experience in field collecting, in which he mentions a very valuable suggestion to his co-workers in Oölogy, and while we do not propose to either uphold or decri any methods that may be given by our correspondents, or to be held responsible for their views, we invite opinions to be freely expressed on matters of interest to our readers. The article on "Egg Collecting" contains methods that we have pursued in our work, and we feel inclined to endorse it, on the principle of *humanity*, thinking it would be well for collectors to use due discretion in their *present* labors if they desire to continue their investigations in the *future*.

There seems to be a slight dissatisfaction on the part of a few, that this magazine should devote a portion of its space to another science, than that of bird life. To such we would ask that they bear kindly with it. At present we are giving more matter pertaining to ornithology than was promised at the outset, and as the entomological department is mainly the records of original investigations of gentlemen, rated high as authorities in

that science, we think it should prove of interest to all lovers of natural history.

A few illustrations often give more information than many words, and as all are not gifted with the ability to sketch well, we would suggest to such of our readers as may be planning an outfit for their next season's work, that an amateur photographic camera makes a valuable field adjunct. We have used one for several seasons, and would not be without it. Many nests of rare breeders, in which the eggs were too far advanced in incubation to be preserved, have been transferred in truthful representation to the album, and is only one of the instances in which the instrument has served us a good turn. At the present time the art has become so simplified that good results can be obtained with little practice.

With due regard for the conformity of the make-up of a magazine, yet we deem it best, from our experience with the previous number, to change slightly the arrangement of the reading matter, to do justice to the departments of our associates, the space allotted in the January issue not allowing all the articles to come under their proper heading.

We give space in this issue to several articles on Entomology, which were crowded out of the last number.

List of Summer Birds of the Vicinity of Tim Pond, Maine.

BY F. H. C.

Tim Pond is situated in the northern part of Franklin County, in what is termed the Dead River region. My notes are simply the birds seen during a month's visit; the last two weeks in August and first two in September, for two consecutive years, 1884 and '85. It is not intended as a complete list for that locality, and is confined to the wilderness around the lake; the bird life differing somewhat from the clearings in Eustis plantation, some twelve miles away.

Robin, (*Merula migratoria*). Only one seen around the camps in '84. In '85 saw a pair, and found young just able to fly. Also found nest in a small yellow birch.

Hermit Thrush, (*Hylocichla ustulacea pallasi*). One seen in deep woods, and another in some alders, near the lake.

Black-capped Chickadee, (*Parus atricapillus*). A few seen.

Golden-crowned Kinglet, (*Regulus satrapa*). They seemed to move in small companies. Common one day and not seen the next.

White-bellied Nuthatch, (*Sitta carolinensis*). Not common.

Brown Creeper, (*Certhia familiaris rufa*). Only one seen.

Yellow-rumped Warbler, (*Dendroica coronata*). Not common. Secured a specimen, a male, in moulting plumage.

Redstart, (*Setophaga ruticilla*). One shot and given me by a lumberman, who was acting as my cook.

Cedar Waxwing, (*Amphelis cedrorum*). Commonest bird about the camps.

American Crossbill, (*Loxia curvirostra americana*). Noticed as common in '85; not any seen in '84. Very tame, coming fearlessly about the camps to feed upon the scraps thrown away when dressing trout.

White-throated Sparrow, (*Zonotrichia albicollis*). Common around the camps, keeping in flocks.

Junco, (*Junco hyemalis*). Common.

Rusty Grackle, (*Scolecophagus ferrugineus*). Not common. Only a few seen in some brush on a beaver dam.

Common Crow, (*Corvus frugivorus*). This species was "conspicuous by its absence" about the lakes, while in the clearings at Eustis I saw it in flocks.

Blue Jay, (*Cyanocitta cristata*). Tolerably common.

Canada Jay, (*Perisoreus canadensis*). Not common. Not more than half a dozen seen each year.

Ruby-throated Hummer, (*Trochilus colubris*). A pair seen and one secured. It was a surprise to me to find this species here. They certainly were obliged to exist without flowers, as this wilderness was destitute of everything in plant life that blossomed.

Nighthawk, (*Chordeiles popetue*). Common; seen flying over the lake at dusk when fishing. Several shot by different "sportsmen."

Hairy Woodpecker, (*Picus villosus*). Not common.

Black-backed Three-toed Woodpecker, (*Picoides arcticus*). Irregular as regards abundance. In '84 I saw one day as many as twenty pecking dilligently on the old stubs in the camp clearing, and many were shot by the fishermen visiting the

camps. Noticed the birds would have such a foot-hold upon the rough bark of the spruce trees that after being shot they would not fall, but hang pendant by one or both feet. The next day I did not see any, neither in my stay at the camps in '85 did I see more than a dozen specimens.

Yellow-bellied Woodpecker, (*Sphyrapicus varius*). Only one seen, that being a specimen shot and given me.

Pileated Woodpecker, (*Hylotomus pileatus*). Not common. One secured in '84. None seen in '85.

Belted Kingfisher, (*Ceryle alcyon*). A pair seen around the lake both seasons.

Osprey, (*Pandion haliaetus carolinensis*). One seen in '85, remaining about the lake.

Am. Goshawk, (*Astur atricapillus*). A specimen, young, shot in '84. A number of hawks were seen flying high in the air or perched on distant trees at various times, but could not identify on account of distance.

Ruffed Grouse, (*Bonasa umbellus*). Common, and lacked the wildness of those of same species seen in the clearing.

Canada Grouse, (*Cinna canadensis*). Only one seen, and that secured.

Great Blue Heron, (*Ardea herodias*). Two seen on the banks of the lake, when fishing about dark.

Spotted Sandpiper, (*Tringoides macularius*). A few seen about the lake.

Black Mallard, (*Anas obscura*). A small flock remained in "Mud" pond for about a week. This pond is separated from Tim Pond by a beaver dam.

Loon, (*Colymbus torquatus*). Saw a couple on the lake each year, their wailing cry making sad music in that lonely wilderness. They were quite tame and one—a young one—would admit of being stroked by my hand. But at last a sportsman, freshly arriving from Boston, deemed it a fine thing to shoot it, and it fell a victim to misplaced confidence. For two days and nights the remaining one constantly uttered its mournful cry, and a week later I found it lying dead on the shore. My guide, Mart. Fuller, an intelligent Yankee backwoodsman, stoutly asserts it died of a broken heart, but I am suspicious of the afore-said cockney sportman.

Sharp-shinned Hawk in Winter.

The occurrences of the above species in New England in winter are not common. I cite an instance of one taken Jan. 27, 1886, in Rehoboth, Mass. I have another in my collection, taken late in November, '83.—F. II. C.

Practical Taxidermy.

BY FRANK B. WEBSTER.

CHAPTER VI.—SMALL ANIMALS.

In mounting birds it is important that the beginner should take the measurements until by practice he becomes familiar with the size and shape; but with animals (mammals) it is *absolutely necessary*. I would advise making a rough sketch showing the general form, prominent muscles, depressions, &c., and noting on it the details of measure. After the skin is removed there is in it very little to be guided by; far less than in birds. Referring you to the chapter on skinning birds, you will notice that the process with animals is quite similar. For our study I will select a common hare—White Swamp Rabbit. Laying it upon our work table, we will measure it as follows: Nose to tail; breast to tail; fore foot to back; hind foot to back; girth back of fore shoulder; girth front of hind quarters; fore shoulder to hind shoulder; base of ear to nose. We next proceed to skin it. Fill the mouth, nostrils and vent with cotton; cut from breast to vent. (A—B fig. 1.) Skin to right and left, severing the bones at the hip joints, C, C. Skin down to foot, about to D; clean bones, leaving enough muscle to hold them together. There will be three principal bones in the skin. (See fig. 2.) Force the skin off the back and flanks to root of tail. Take a partly split stick, or clothes pin, and force it well on to the tail between body and skin. (See fig. 3.) Hold the pin firmly and pull by the body; the pin will hold the skin, and the tail will slip out. There is little danger of injuring the skin if you hold the pin firmly so as not to allow the skin to be drawn through; if it is a long tail like a squirrel's, and a shot has passed through it, it will be liable to break (the bone) and leave part in the tail skin. In that case you must open from the outside at the place where it broke, (under side) and get a fresh hold for more pulling. *The skin of the tail does not turn inside out.*

Proceed, using great care not to stretch the skin, till the fore legs (wings) are reached; sever at shoulder blade, E, E, fig. 1, and clean, leaving three bones in the skin, same as with the hind legs. Skin to the skull and over; ears are not to be skinned; cut off what gristle you can without cutting through to the outside; leave the rest with the skin. Now note. If the animal is to be stuffed with the mouth closed, skin all off but the tip of the nose. (Fig. 4.) If with the mouth open, skin as far as you can without disturbing the front part of the lips. (Fig. 5.) This rule is

for small animals, up to foxes and dogs. In large animals the entire skull is removed. The reason is: In large animals a frame body is made which holds the skin in place. In small ones a wire merely being run through the skull, the skin adhering to lips, holds it in place and saves some trouble. In this case we will close the mouth, and detach the skin as in fig. 4. After cleaning the skull, removing brain, etc., we will sew up the mouth. Foxes, dogs, &c., begin at center and sew right and left, overcast stitch; do it so that when the skin is turned the under lip will be a little under the upper. If a squirrel or rabbit, it will be found that the lip parts from the nose down, making a three-cornered opening. (Fig. 6.) Sew from G to H, and then from H right to J and H left to I. Next poison the skin thoroughly with the soap. If a dog, give it two or three coats before using sawdust. Turn the skin back and it is ready for mounting. If you have an animal with horns, skin to base of skull and cut off; open the skin outside the neck. (See fig. 7.) Cut to a point between the horns, K to L, then from L to each horn, and around the base of the horn closely. You can then take the skull out; the cut in the skin will be like fig. 8. This is necessary in skinning deers' heads.

In stuffing animals two points must be observed, viz., they must be stuffed so as not to become distorted by shrinking, nor be made too full to start with—*solid and just right*. We begin with the head: fill the eye cavity, sides of jaws where we cut away the meat, and nostril cavity (this part is gristle, and if not well looked to, in a few weeks your specimen will have a peculiar turn to its nose that will well express your own disgust.) with clay, plaster or putty. If the latter have it as free from oil as possible. If you use plaster or clay, leave a place to set the eyes with putty when the stuffing is complete. Now push the skull in place. Cut a quantity of excelsior finely; if the animal is very small, use tow. For our hare we will use both mixed. Fill the throat, skull and neck down to the breast; pack it in well without distorting. Next cut six wires: One for the body, one and one-half times the length of the animal (head to tail); two for hind legs, one and one-half times the length of leg, C to toes, fig. 2; two for fore legs, one and one-half times the length of leg; one for tail. This must be two to six inches longer than the tail. In selecting wire, use that which will be heavy enough to bear the weight. The following sizes I give you to work from: Chip, squirrel, 18; woodchuck, 12; fox, 11; gray squirrel, 16; hare, 13; setter dog, 9. From these you can estimate what would be required for others.

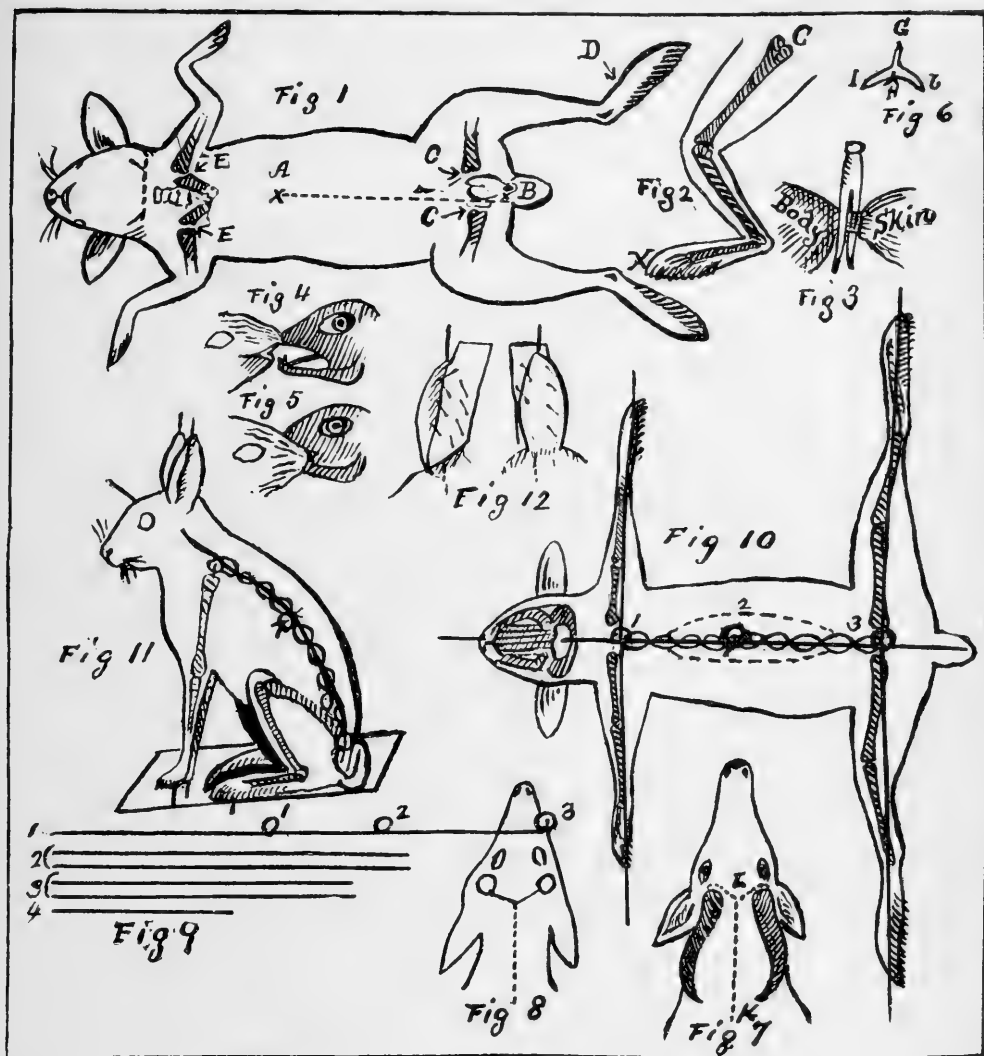


Fig. 9 represents the six wires to be used for our hare. Sharpen all; take body wire and make three loops, one at the end, the second the same distance from it as the animal was from fore to hind shoulders, and the third in the middle. Next run the four leg wires from sole of foot, (same as with birds,) and carefully wrap the bones to the wires with tow, making the two, bone and wire, the same size and shape as the leg was when the meat was on. Take the body wire, pass the points up through the neck filling into the skull cavity, and out through it between the eyes. If the bone is too hard use your large leg drill to make the hole. Push it through till the loops are in proper place. Now pass the two fore leg wires through loop number one, fig. 9, the two at right angles, and twist them firmly around the

body wire, clinching them in loop number two; in the same manner pass the two wires of the hind legs through loop three, twisting them around the body wire and clinching at loop number two. Take the tail wire, wind tow around one end till it is about the size of the tail bone that was drawn out. *Poison this well* and force it into the tail, then clinch the wire through loop three. Be careful and have the length from loop three to the end of the tail exact. Now push the bones up on the wires till they come to the body wires. Our hare will now appear like fig. 10, with a wire frame in it. We now fill with cut tow and excelsior. With our sketch with measures before us we must work as best we can; fill it well and press the filling together compact, pressing in hollows and filling out where required

When done, sew up the opening, bend the legs into position, being guided by the natural joints in the bones. Now place the hare on a board, fig. 11, showing bend in hind legs. When the bones are missing or broken, the wire will answer, but it is a more difficult job to get a good bend.

The mouth, nostrils and head will need shaping; fill in, using cotton, through the eye holes and corner of mouth, carefully working out your figure. Draw the ears up into place. If large ones cut out pasteboard and sew them to it on the inside, and fill cotton in between the ear and board, and perhaps run a single wire down through into the body. (See fig. 12, showing both sides.) For deer some use wooden frames, and I have seen ears filled with plaster. For small animals, such as squirrels, all that is necessary is to keep them pinched in shape while drying, by pinching with the fingers once or twice a day. When all is done fill the eye cavities with cotton, and use a pair of Thomas Hurst's superior glass eyes.

Nest of the Blue-Grey Gnatcatcher.*

BY GEO. H. CENTER.

May 18, 1885, I found a nest of this little bird on a limb twelve feet up, on a dead walnut tree, situated on the bank of a small creek. The tree was leafless, the water having washed the earth from its roots so that it almost fell with my weight when I ascended to the nest, which was placed in the fork of the branch so that one limb formed a roof to shelter it. The nest was composed of a coarse moss found on the trees near by, and spider webs, this latter material being wound around the whole nest, together with a few pieces of wool. It was lined with the down found on hickory buds, and a few feathers, together with some very fine dry grass.

There was one egg in the nest when found, which I let remain until May 22d, when I returned and took the nest and five fresh eggs. This time I saw the female on the nest. She was sitting parallel with the limb, as I think she always would, for on the side from the tree there was a low place where she rested her chin which enabled her to sit with more ease, as it would otherwise compel her to keep her head straight up.

The next day I was in the woods at an early hour and saw a pair of these little birds flying from tree to tree, gathering material for their nest. I watched them for some time, and at last saw them fly into the top of an elm. It took some length of time before I could discover them, as

they had evidently just began house building. I at last saw it on a limb about twenty feet from the ground. I did not trouble them until the 3d of June, when I returned and took the nest with five fresh eggs. The work and material used were precisely like the first, except the nest was smaller, as also were the eggs. Nest number one was two and three-quarters inches in height outside, two inches deep on the upper side, one and one-half inches on the lower; circumference eight and one-quarter inches. Number two measures two and one-quarter inches in height, one and three-quarter inches in depth on the upper, and one and one-quarter inches deep on the lower side; circumference seven and three-quarters inches.

Large Sets of Eggs of the Mourning Dove.*

BY PHILLO W. SMITH, JR., GREENVILLE, ILL.

It has been my good fortune to find several large sets of the Mourning Dove, (*Zenaidura macroura carolinensis*.) My first set of three eggs was taken in 1883; the second in 1884, and four sets of three eggs each in 1885. I will only describe those taken in 1885. The first set was taken April 19; the second April 29; the third June 15, and the fourth June 20. Two of the sets were taken from old Robin's nests, the other two from Dove nests of the usual construction and material. The birds were flushed from their nests in every instance. In sets Nos. 2 and 3, one of the eggs was considerably smaller than the others of the set. In the other two sets there was no more than the usual variation in size and shape, and on blowing the eggs they all appeared fertile with the exception of one egg in set No. 4, (the smaller egg.) In collecting I also came across a Brown Thrasher's nest containing one egg of the Thrush and two of the Dove's. Also a Robin's nest with one of the Robin's and one of the Dove's. In both instances the Dove was flushed from the nest. Being unable to visit the locality again I did not have the pleasure of watching the old Dove feeding and caring for her foster children, (provided the Robin and Brown Thrasher eggs were hatched.) The question that arises in my mind is whether the Robin and Brown Thrasher had deserted their nest, or whether the Doves appropriated the nests while their owners were absent. In the case of the large sets of Dove's eggs, did the same bird lay all three eggs, or did Dove No. 2 take possession while No. 1 was absent? I should like to hear from others on this subject.

*From Oölogical Department.

*From Oölogical Department.

ENTOMOLOGY.

WRIGHT & BATES,

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ASSOCIATE EDITORS.

Address all communications for this department as above.

Editorial Note.

In this number we inaugurate a series of articles on the Sphingidae of New England. They will consist of descriptions of the various members of this family which are known to occur within the limits of the territory mentioned.

We would request the communication of notes of capture in this territory, and also of any observations on the habits or peculiarities of the family.

Practical Entomology.

BY WRIGHT AND BATES, 73 HANOVER ST., BOSTON.

(Continued from page 15.)

COLEOPTERA.

PECULIARITIES: Insects of this order are mandibulate, or furnished with jaws, and their anterior wings are converted into hard corneous shields, protecting the posterior wings and abdomen.

LOCALITIES WHERE THEY ARE GENERALLY FOUND.

The *Carabidae* are generally to be found under stones, chips, logs, &c., especially where the soil is damp; in the winter some varieties may be found hidden under and in the crevices of the bark of trees. They especially frequent the edges of woods and the banks of small streams.

The *Cicindalidae* will be found in early spring and summer flitting about in the roads, pastures and sand banks. Diving in and swimming about on the surface of the water are various members of the families of *Dytiscidae*, *Gyrinidae*, *Hydrophilidae*, and *Parvidae*.

The *Silphidae* are found under the excrement of cattle, especially cows, and in and under the carcasses of dead animals.

The *Staphylinidae* may be found under the stones and chips, under the bark of dead trees, in and around ants' nests, and carrion in fungi, on the leaves and flowers of plants, and in the excrement of cattle.

The *Scarabidae* or *Lamellicora* beetles are to be found flying about at dusk, and also hidden under the excrement of cattle, and in the dried carcasses of dead animals, while many spend the

most of their time on the leaves and flowers of plants.

The *Elateridae* and *Buprestidae* haunt the pastures and the edges of woods, where they may be seen flying about in the sun or basking upon the bark of trees and on the flowers. They are also found in the winter under the bark of trees.

The family of Fireflies, or *Lampyridae*, must be looked for in warm weather flitting about the fields, especially in the evening, or on the leaves and flowers; in the winter they are found in large numbers hidden in the crevices of the bark of trees.

The *Cleridae*: The larvæ of this family are carnivorous, but the beautiful little beetles are to be found in the warm season in great numbers on the flowers.

The adult beetles of the family of *Meloidae* are found in the grass and around the flowers which the bees frequent.

On the flowers and trees are large numbers of *Chrysomelidae* and *Coccinellidae*, and the latter are in the crevices of the bark in the winter.

The *Curculionidae* are to be met with on the flowers and fungi, and under the stones and bark.

TIME AND METHODS FOR COLLECTING.

For active beetles, the spring and autumn are the best times for most varieties, for in summer, with the exception of the vegetable feeders, they are scarcer. At these times the collector must watch every spot, for they seem to be found everywhere; beat the trees, sweep the grass fields, drag the streams, sift the dirt and leaves, examine the flowers, in fact, look everywhere. In winter the plan is different. A few small bottles of alcohol, a pair of small forceps and a hatchet are all that is really necessary, though a box or satchel will be needed if the larvæ are to be preserved and reared. Chip off the bark from the trunks of the rough-barked trees, such as the oak, pitch pine, and white pine: strip the bark from dead trees, and if the tree is decayed chop the trunk into small pieces; the beetles will often be found in the very centre of the trunk of decayed trees, especially pines and birches.

Breeding of *Attacus Cynthia*.

The rearing of the silk worm has become an important industry in the United States, and owing to the lack of hardiness, and the tendency to disease of the *Bombyx mori*, the introduction of a race of insects possessing the silk producing power and without these disadvantages, is an important object. One of the most desirable insects for this purpose is the *Attacus Cynthia*. This

worm, which feeds on the leaves of the *Ailantus glandulosa*, was introduced into Europe in 1856, by M. Guérin de Méneville, and thence to the United States in 1860 by Dr. Thos. Stewardson of Philadelphia. It is a native of the north of China, lat. 35–40°. The plant upon which it feeds is known as the "Chinese Tree of Heaven," known in its native country as "*Ailanto*." It is a tree of large dimensions with straight trunk, smooth brown bark and luxuriant foliage, the leaves are 2–5 feet in length with 10–20 pairs of leaflets and an odd one. The flowers are green, very ill scented, as is also the freshly broken wood and foliage; blooms in May and June. It has been introduced into this country and has been found to be exceedingly hardy, surviving and even flourishing in some of our severest winters and droughts.

Of one lot of these worms raised in the summer of 1885, the parents left the cocoons on July 17th, mated at night of July 18th, and on July 19th 274 eggs were deposited. (Dr. Stewardson writes that his moths attached at 10 p. m., and remained *in coitu* till 6 a. m., depositing 280 eggs.) Of those raised in 1885 the sexes invariably attached at night and remained so for from 8–20 hours; for some hours before, the male was very restless, fluttering about and breaking his wings against the sides of the glass case in which they were confined. The female laid eggs in single and double lines, and in clusters of from 1–30; these eggs were hatched on July 28th.

At first the worms were of a yellowish color with black tubercles, and black spots on the underside of the abdomen. They apparently had five stages of existence, but the dates of moulting were not accurately observed, owing to absence. In the third stage it becomes almost white. In the fourth stage it is from one to two inches in length, turning gradually green with green tubercles, and head and feet yellow. In the last stage the color is a beautiful emerald green with tubercles of marine blue, until it ceases to eat, when it turns to a yellowish green, and is about three inches in length.

On Aug. 21st the worms commenced spinning. One attached itself to the glass door of the vivarium and one to the corner, but the most of them attached to the leaves. Their method was as follows: The caterpillar crawls in between two leaves which hang closely together, (sometimes rolling a single leaf about it) draws the edges together with a few threads and then carries the thread along the pedicel of the leaf to the peduncle, around which it is firmly wrapped, (probably a provision of safety,) and continues until the pedicel and interior of leaf are entirely coated, it

then weaves its cocoon, drawing the leaf more tightly around it as it nears completion.

The eggs are equally large at both ends, of a white color with a black spot, turning gray as they near the hatching period.

The cocoon is elongated, of a pale gray color, very close tissue, one and one half to one and three quarters of an inch long and about three fourths of an inch thick. The silk appears to be very strong. It is said the silk is wound in a zig-zag course, making it difficult to reel in a continuous thread.

The perfect moth expands from 5–5½ inches; head and antennæ greyish brown; antennæ strongly pectinate; thorax and abdomen lighter grey or buff-colored; wings with a broad transverse light-colored band, edged interiorly with white, near the middle, the space within which (forming nearly an equilateral triangle) is brownish-gray, and that without ash-color running into brownish gray at the margin of the wings. Just within the margins there are two narrow brown streaks running parallel with them, somewhat interrupted before reaching a dark purple spot near the apex of the anterior wings, this spot is surmounted by a white crescent, and a zig-zag white line runs from it to the tip. The basal portion of the anterior wings is traversed by an ash-colored bar commencing on the posterior edges next the shoulder, and after continuing in a nearly straight line for about an inch is suddenly deflected and terminates on the anterior margin; at the apex of the angle formed by this line is a translucent spot, in nearly the shape of a crescent, surmounted with black. The posterior wings likewise bear a similar spot, but more crescent shaped, and toward their base is an ash-colored arched bar bounded on the outer side with black. The under side differs principally in being paler, and is destitute of the bars at the base, except that the base of the angular bar of the anterior wings shows slightly.

According to Morris the male differs in being usually smaller, abdomen much shorter and smaller and conical toward the end; antennæ shorter and wider and do not taper to such an acute point as those of the female; the amount of white in the posterior portion of the tergum is much more considerable; the front between the eyes is much broader and shorter; posterior wings a little longer, and the anal extremity is furnished each side inferiorly with a broad articulated lap, which covers the genital organs and is furnished at the lower posterior edge, with two hooks, which, together with other hooks around the genital pieces, serve to secure him tightly to the female during the long process of fecundation.

Winter Collecting.

Nearly all young collectors labor under the erroneous impression that there is no outdoor work for them in the winter. That is a mistake. No matter how cold the day, many specimens of insects, very rare in summer, may be found housed away in some secluded spot, under the bark, in decayed wood, and in fact almost anywhere that there is room for them to crawl in out of sight. This is also the best time to secure many larvæ and pupæ, for many of the former are preparing to transform in the early spring, and the trees being denuded of their foliage the chrysalides are much more easily discerned. On the 10th inst., two of us packed our kits, shouldered our snow shoes and took the eight o'clock train for Malden. The snow was deep and light, and the thermometer registered from 8° to 11° above zero. The ground selected for the day's operations was destitute of dead or decaying wood, hence our capture was lighter and less varied than it otherwise would have been. We only remained about three hours, and our time was spent examining the crevices in and under the rough bark of live pines, foot or snow shoe racing, picking ourselves out of the snow, etc. Our capture consisted of the following:

Coleoptera: *Axinopalpus biplagiatus*, 3; *Gynandropus hylacis*, 7; *Adalia bipunctata*, 5; *Læmophlaea biguttatus*, 4; *Nemosoma parallelum*, 1; *Catogenus rufous*, 57; *Cyphon variabilis*, 43; *Betarmon bigeminatus*, 2; *Melanotus communis*, 6; *Ellychnia corrusca*, 20; *Clerus thoracicus*, 3; *Tanebrionides*? 4. *Hemiptera*, 15. *Orthoptera*, 192. *Arachnida*, 11, and *Lepidoptera*, 2. One of the latter was a ♀ *Phalaena autumnata*, alive and smart. I went out again on the 17th inst., and got, besides many duplicates of the above, some additional species of *Lepidoptera* and *Coleoptera*, including *Rhagium lineatum* (larvæ, pupæ and imago,) and a fine specimen of *Vanessa antiopa*.

CYANIDE.

Sphingidae of New England.

FAMILY: SPHINGIDAE.

The simple eyes on the vertex, at the base of antennæ are wanting. Head large, hairy and seldom tufted; antennæ prismatic, thickened toward the tip and terminating in a hook, and usually a ciliated seta; doubly ciliated in the males and simple in the females. The eyes are generally large, round and prominent; the palpi have the third article reduced to a mere point, resting on the summit of the well developed second article. The tongue is usually almost

twice the length of the body, sometimes more and occasionally almost obsolete.

Thorax always large and powerful. The wings are elongated, narrow and dense, with the inner border much shorter than the outer, and are usually attached to each other by a bristle and hook. The nerves are thick, strong and contiguous to each other at the base. The abdomen is usually cylindrico-conical, longer than the posterior wings, and occasionally tufted at the tip; the legs are usually long and strong, and the tarsi furnished with a pair of simple, free claws. The anterior tarsi have a long single spur on the inner surface, the middle a terminal pair, and the posterior two pair.

The eggs are laid singly, or in small clusters, on the food plants of the larvæ, which usually grow very large and lead a solitary life. Bodies naked, cylindrical, and generally more or less ornamented with bright colors. They have eight pairs of feet, the terminal ones being large, strong and square; the eleventh segment is surmounted by either a caudal horn or a lenticular tubercle.

The pupæ are cylindrico-conical, terminating in a stout, sharp spine. Transforms in an imperfect cocoon, just below the surface or in an underground cell.

GENUS *SMERINTHIS*.—*Latru*.

Body robust; tip of abdomen turned up. Head small, sometimes depressed; front broad, pilose or sub-tufted; eyes small; palpi thick and short; tongue short; antennæ generally without terminal hook. Thorax short; abdomen cylindrico-conical, more than twice as long as the thorax. Wings without bristle and hook; anteriors longer than body, and about twice as long as broad. Male antennæ densely sub-pectinate; female antennæ, simple.

Larvæ: head semi-oval, with acute vertex; body granulated, and with a caudal horn; obliquely banded with dorsal thoracic lines on each side. Transforms in a cell below the surface of the ground. Pupæ smooth and cylindrico-conical.

I.—*S. MODESTA*.—*Harr*.

Palpi, head, and upper side of thorax, olivaceous-brown; under side of thorax, abdomen, and tibiæ olivaceous.

Anterior wings, from the base to beyond the middle of the disc, very pale olivaceous, with an indistinct, irregular, darker streak across the middle, and margined toward the base of the wing with a still paler hue; a broad, deep, olivaceous median band, undulating anteriorly and crenated or undulating posteriorly, containing a pale, angular, discal spot, and darkest toward the base of the wing; a dark olivaceous line across the mid-

dle of the nervules, crenated posteriorly, and preceded by a paler band, separated from the median band by a darkish line also crenated posteriorly. The remainder of the wing is deep olivaceous with a paler band from the middle to the inner angle.

Posterior wings purplish-red in middle, extending near to, and darker toward the base, with a transverse black spot above the inner angle bordered anteriorly with very pale olivaceous, and a blackish olivaceous patch beneath it. In the male the wing is olivaceous exteriorly and has a long terminal border.

Underside olivaceous, anterior wings with a triangular purplish-red spot with the apex at base and gradually fading to a very pale olivaceous band which crosses the middle of the nervules and extends across the posterior wings. The discal spot shown on the upper side is prominent on the under side.

July. Food, Lombardy poplar. Generally distributed over the United States.

II.—S. JUGLANDIS.—*Abb.*

Palpi reddish-brown or dark brown; head and thorax pale fawn-color, or pale grayish, with a more or less distinct thoracic, dorsal, brownish stripe. Abdomen fawn color. Anterior wings, from base to about the middle of the disc, pale-gray with a faint lilac tinge or pale fawn-color; a brownish line crosses the basal part of the disc; a broad median shade with its posterior margin commencing on the costa, midway between the origin of the post-apical vein and the tip, and inclined to about the middle of the inner margin, darkest at the edges, and ochraceous-brown, dark brownish, or ferruginous-brown, and sometimes almost obsolete above the medio-posterior vein, whence spring two lines which mark the outline of the shade; a line of the same hue parallel to the median shade with an intervening pale space, and a light colored shade near the hind margin, extending from the central discal vein to the inner angle, the marginal space dark colored, with a small light colored costal spot extended to the tip. Posterior wings dull fawn color, with a central light colored band, edged on each side by dark lines corresponding to the posterior edge of the median shade.

Mature larvæ: Head, pale reddish-brown, with pale yellow lateral stripe and granulations. Body, yellowish green, with oblique lateral crimson streaks edged beneath with pale yellow. Body tinged with crimson above proleg and behind the horn. Horn, brownish with blackish spinules. Length, about two and one-quarter inches. The larvæ is full grown about the middle of Septem-

ber, and crawling into a cell just beneath the surface transforms into a blackish-brown pupæ, which bears four little prominences in front of the head case; the terminal segment is flattened on the ventral surface.

Food: Black walnut and hickory. Generally found wherever its food plant grows.

CORRESPONDENCE.

EDS. ENT. DEPT. O. and O.—Sirs: I have read the article by B. on "scarcity of insects in 1884-'85" with a great deal of pleasure, and I fully agree with him as to the "causes," so far as he goes, but, when he makes the assertion that it "undoubtedly follows," that a wet, stormy winter will be succeeded by scarcity of insects, I must disagree with him. It has been my experience that where insects were numerous their pupæ were plentiful during the winter previous. Such was *not* the case during the winter of 1883-4 and 1884-5, as it should have been, if the scarcity was caused by the pupæ being winter killed. I consider a drought, of sufficient duration to wither the foliage, one of the most potent causes of insect scarcity, as the food supply of the leaf-eaters is not alone cut off before maturity of the larvæ, but the plant itself becomes diseased, owing to its inability to breathe. One of my most infallible signs of a coming scarcity of insects, is to see the trees in winter clothed in their faded summer garments.—*Cyanide.*

EGG COLLECTING.

Editor of O. and O. Sir. No matter how much we may try to evade the question, it is a fact, that eggs taken from a nest will never multiply our feathered tribes; on the contrary, it has a tendency to a decrease, at least in certain methods of collecting, as practiced by a class of collectors. Living in a glass house myself, I will not throw any stones; but perhaps may be pardoned by my fellow collectors if I urge that method and carefulness be employed in their work. In my own case I divide the season into short spaces of about a week each, and jot down what birds I may expect to find nesting (for the first laying) during such periods of time. I then look for such birds as I am sure of obtaining from first sets and fresh in incubation. The birds immediately commence to build and lay again. Afterwards I do not trouble them, and they rear their brood the same as though they had not been despoiled. I have found it to be the same with the species which naturally rear two broods, and at the close of the season find myself with a fair result, and an easier conscience, and, better still, a satisfaction that I have not diminished the bird-life to any extent. As a matter of course I find many fresh sets later than the allotted time for the particular species; these I do not take, as they are usually second attempts at breeding, and if disturbed would entirely break up their nesting, and thus *really* diminish bird-life. Something of my idea may be gathered from the above, and if every Oölogist would carefully study the breeding season, methodically conduct his collecting and refrain from the too-prevailing "grab-all" system, I am of the opinion that Oölogical collecting might be pursued without decreasing our birds to any alarming extent.—*C. F. Weld.*

RECEIVED.—*Morris M. Green, E. Carleton Thurber, Ernest D. Wintle, Falco, Harry G. Parker, W. O. Emerson, Clark P. Streater, Rev. C. M. Jones.*

Our correspondents will confer a favor by writing their articles on one side of paper only.

— MARCH, 1886. —

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Ornithologist



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BOSTON, MASS., MARCH, 1886.

No. 3.

Birds of the Sea Islands.

Corrections and Additions to My Previous List.

BY WALTER HOXIE, FROGMORE, S. C.

I have had so much interesting correspondence in regard to two of the birds in my list of the "Birds of the Sea Islands," that I think the readers of THE ORNITHOLOGIST AND OÖLOGIST may be interested to know the conclusions at which we have now arrived.

But first let me recur to the Red-shouldered Blackbird, which I mistook for *argubernator*. Two of my correspondents referred it to moulting plumage, and I now find they are right. I have this winter obtained two specimens in just that stage of moult. Both show indications of "pin-feathers" at the border of the red patch.

The Small-headed Flycatcher, proves to be a female Pine Creeping Warbler in peculiar plumage. "It would puzzle any ornithologist," says one of my kindest critics.

I have not taken a Bachman's Warbler this year, but I am firmly convinced that I have done so in past years, as the following circumstance will show. While in Savannah, last fall, Mr. G. Noble was showing me the colored plates in *Studer's Ornithology*, (I think that is the title of the work,) and as he turned the pages rather rapidly to find some particular figure to which he wished to refer, I stopped him at once with the exclamation, "There is a Bachman's Warbler."

There was no name as a guide, and we were not speaking or thinking of the bird; so I had no possible context in picking out this particular figure at the first glance, from among a dozen or so other small birds. A reference to the index proved that I was right, and my conviction is the same now, or even possibly stronger than when I wrote my list. Mr. Noble thinks he has seen the bird near Savannah.

I secured a Wood Duck on Edding Island, Nov. 27, 1884, and in the following month an-

other. This species seems to be only a straggler here, though not uncommon in the fresh water further inland. A Woodcock was killed by a negro on Edding Island, Dec. 3, 1884, and the following week I took another and saw several more, the latter being always the easier operation. Both specimens were abnormally large. I have seen none this year as yet.

Took a Ring-billed Gull, Feb. 22, 1885. They were quite rare last winter, but the present season they seem to be more plenty.

Just after the great cyclone of Aug. 25, 1865, I took a Bridled Tern. It was a male in immature plumage. Measurements, 13.50x30.20 inches. Fork of tail 2.50 inches deep. Bill and feet blackish; inside of mouth pale flesh color. Stomach empty. It was in company with several Short-tailed Terns, and its graceful and more elaborate style of flight at once distinguished it from the others. It unfortunately dashed up close to the gun when shot, and was somewhat mutilated about the head, but made a passable skin.

October 25, 1885, I secured a Northern Phalarope. It was a male measuring 7.25x12.68 inches. Bill bluish-black. Legs bluish, on the inner side yellowish-white, as were also the inner membrane of the feet; but the toes were the same color as the legs. Iris, hazel. The bird was swimming in a brackish pond, and when first seen through the weeds I mistook it for a Grebe. I shot a Snipe and Yellow Legs, and then seeing that the supposed Grebe did not move I gave it a charge of No. 8s, and was much astonished to find what a prize I had secured.

Dec. 28, 1885, I took a Junco, the first I ever heard of so far from the mountains, though I am told they are quite common about Augusta, Ga. Coots have been plenty this past fall, in a fresh pond on Edding Island. Previously I had never secured but one specimen in this vicinity. Catbirds, which were so common last year (their first appearance) just showed themselves the first of the season, and have not been seen since. Their

invasion of this locality seems to have been a very unique bird movement.

A friend informs me of the capture, on St. Helena Island, of a Grebe that was unknown to him and undescribed—at least in that plumage—in Coues' Key. He mentions that the back of the neck and head were of a velvety black. Is it possible that it could be the true *Nigricollis*?

Florida Birds in December, 1885.

BY A. L. BROWNE, ORLANDO, FLA.

A few changes among the birds have occurred this month, but none of much importance.

On the first day of the month, just after sunset, a Chuck-will's-widow, (*A. carolinensis*), suddenly appeared close by the house, in the orange grove, and perched on an overturned plow for some minutes, once darting some distance up in the air evidently in pursuit of an insect. This was the only instance in which I saw the species. The Red-poll Warblers were very abundant at the commencement of the month, but seemed to diminish in numbers somewhat during the latter part, and the Chipping Sparrows, which frequently accompanied them, became the more numerous of the two.

One small flock of the Warblers in this grove the last of the month, were quite tame, showing but little fear of persons about the house, and often coming upon the porch after flies.

The Grass Finch and Savannah Sparrow, like the Red-poll Warblers, grew less plenty during the last half of the month. The Meadow Lark, Belted Kingfisher and Killdeer were quite scarce.

Titlarks were rarely seen after the first week. The Marsh Hawk disappeared entirely, but its place was supplied by the Sparrow Hawk, (*T. sparverius*), which became the first of the month quite plenty, usually in or near the pine woods, though occasionally found in an orange grove.

Another new bird for the month was the Purple Grackle, (*Q. purpureus*). Saw large flock on the 16th, among the pine trees on the edge of a lake, and another on the 21st, around a little pond close to the city. Saw flocks at intervals afterward.

The Great White Egret, (*H. a. egretta*), and Great Blue Heron, (*A. herodias*), also appeared. The former I first saw on the 4th, and found frequently during the month about the lake shores, often wading deep in the water and catching fish or frogs with great dexterity. The Great Blue Heron was seen only on the 22d and 28th, perched in pine trees near the lakes.

The only time I have ever seen the Brown Thrush, (*H. rufus*), at this place was on the 19th of the month. He was in the hummocks, and

very sly; I could only get an accasional glimpse of him as he darted about amongst the scrub palmetto. Saw one Great Carolina Wren, (*T. ludovicianus*), on the 29th, about the edge of a high hummock.

Noticed several times one of a pair of Loggerhead Shrikes, which make this grove their home, pounce upon a Mockingbird who had approached too near the location of their last season's nest, and drive him from the vicinity. From this I judge that they are preparing to build, as that habit toward the Mocker seems to be a characteristic of the breeding season. A warm, sunny day following a frosty night was a time of great activity among the birds. On the 7th, which was such a day, I found Maryland Yellow-throats exceedingly abundant about high and low hummocks, (this month I found both sexes equally numerous), also Tufted Titmouse and Carolina Chickadees in the same places much more abundant than usual. The other species were more sprightly than they ordinarily appear.

The 28th and 29th were similar days, and it started the Bluebird, Cardinal Grosbeak and Mockingbird briskly into song, though it may prove only temporary. The Grosbeaks have been more plenty this month than last. Red-bellied Woodpeckers and Flickers were more plenty in the pines this month.

Saw one Pied-billed Grebe on the 16th, and three on the 17th, on the same lake on which the one was taken last month. Among the other birds which were plenty in November no noticeable change has taken place.

Red-tailed Hawk.

(*Buteo borealis*.)

BY GEO. P. ELLIOTT, MERCER, PA.

This species is comparatively common in this locality, being the detested Hen Hawk, of the farmers and hunters. It is taken with great difficulty as it is exceedingly shy and hard to approach. It is almost impossible to get within gun-shot of it unless the hunter is on horseback or in a sleigh or wagon.

In the far west, however, this is quite contrary, and H. W. Henshaw, of Washington, D. C., one of our most reliable ornithological authorities, in his "Ornithological Notes," says:

"At Mount Graham, in October, these hawks were present in large numbers, and tamer than I have ever known hawks to be elsewhere. Walking quietly along, there was no difficulty in approaching within a few yards of the tree where one chanced to perch. One individual which I scared from its perch by throwing a stone, took a

few wide circles about me, as though wondering what it meant, and quietly returned to its former stand.'

"Red-tailed hawks in their fall migration are gregarious. One clear, cold autumn afternoon in 1876, I saw, near West Chester, Pa., a flock of these hawks. The sky was destitute of clouds except a cumulus stratum directly beneath, and apparently about half way between the hawks and the earth. In the center of this vapor there was an opening of sufficient size to enable me to watch the gyrations of the birds; two of them suddenly separated from the main body and approached each other, screaming and apparently in great rage. They descended screaming, and, to all appearances clinched, to within about about one hundred yards of the earth, when they parted. Evidently neither bird had received much injury, as they both, after taking short flights across the meadows, ascended in company with two or three of their companions that had accompanied them part way down, to the main body. This party of hawks, after performing for nearly twenty minutes, these, and numerous other aerial antics, continued their southern flight. Combats in mid-air are quite common among red-tailed hawks."

I take the above notes from an article on the "Diurnal Rapacious Birds," of Chester County, Pa., furnished to the Pennsylvania Agricultural Board by Mr. B. H. Warren, of West Chester, Pa.

Though the bulk of the birds of this species pass south at the approach of winter, a few individuals remain with us throughout the entire season. These hawks generally hunt in pairs, preying upon rabbits, quail, snakes, frogs, squirrels, mice, moles, and sometimes skunks. An acquaintance of mine, whom I shall call H., having set a trap to catch a skunk which had been committing depredations among his poultry, was lucky enough to capture the thief, in a piece of woods not far from the house of the captor. Having killed and skinned the skunk, (a most delightful task,) H., left the body where it was, and returned home. The next morning, while passing the spot where the skunk lay, he flushed two large Red-tails from the carcass, which they had partially devoured. Returning home, H., procured two strong, double-spring steel traps and set them, one on each side of the dead skunk. The next morning on visiting the traps, he found that he had caught both hawks. They were the finest specimens of the species I have ever seen,—a male and a female, both adults and unusually large. The female was four feet and four inches in expanse, and twenty-four inches in length, the male being two inches smaller each way. The bodies were completely covered by thick layers of fat.

I have heard of the Red-tailed Hawk killing and eating the common ground-hog, but as I have no positive proof of this, I cannot add it to the list of animals included in their bill of fare. Squirrels form quite an item in the food of the Red-tail. When two of the birds are hunting together, as is frequently the case, the usual mode of capture is that one of the hawks will drive the squirrel around the tree while the other bird poises to seize it as it dodges around to avoid the first hawk.

The bulk of these hawks arrive from the south about the first of March. Nest building generally begins in this locality, about the fifteenth of the month and continues from ten to fifteen days. The nest is constructed of coarse sticks, lined with the inner bark of the birch, oak, or chestnut trees, and is invariably placed in high trees. The eggs are generally two in number, sometimes three, and more rarely four. They are laid from the twenty-fifth of March to the middle of April, and sometimes later. A set of two handsome eggs is before me. They were collected on the seventeenth of April, 1885, near Lake City, Minn. The nest was forty-five feet up in a birch tree, and was composed of heavy sticks, lined with grass and birch bark. The eggs are very different in markings and shape. No. 1 is, in shape, a rounded oval, bluish-white ground color, marked with large reddish-brown blotches over the entire surface; measures 2.50x1.95 inches. No. 2 is of the same ground color as No. 1, but is oval in shape, and is thickly marked at the lesser end with dashes of pale yellowish-brown. These markings are placed lengthwise on the egg, and though thickest at the smallest end extend more or less over the entire surface. Measures 2.55x1.90 inches. They are unusually large.

"Gentry tells us: 'The eggs vary in size, even in the same nest. The largest measures 2.52x1.88 inches, and the smallest 2.10x1.72.' " (Warren.) No hawk eggs present greater variation in point of markings and ground color, "even in the same nest. Some are of a uniform dull white, without markings of any description; others are faintly marked with drab, but the usual marking seems to be of different shades of brown and umber.

This species, never plentiful, is becoming less so every year." Great numbers of *Raptores*, many of them beneficial (the Sparrow Hawk and Screech Owl,) are killed every year by hunters and farmers. But in this region the Red-tailed Hawk seems to have more than its share of the hatred and persecution of the farmers, which, in the writer's estimation should be turned against the Cooper's and Sharp-shinned Hawks.

OÖLOGY.

J. PARKER NORRIS, Editor.

The Editor assumes no responsibility for those articles which have the names of the writer attached.

Nests of Long-billed Marsh Wren.

It has often been noticed that the Long-billed Marsh Wren (*Telmatodytes palustris*), builds many more nests than are occupied by the birds, and it has been suggested that perhaps this was done as an amusement, by the males, while the females are sitting on their eggs. Mr. J. W. Preston, of Baxter, Iowa, writes that he is of opinion that the true reason is on account of meadow mice getting into them; and that this wren will not remain in the nests when they have been disturbed in any way. In case of the latter event happening the wrens at once build a new home; and Mr. Preston says he has seen more than fifty new nests in one small marsh, all of which were deserted, and some of them contained portions of egg shells, evidently the work of mice.

Breeding of the Barn Owl Near Philadelphia.

BY HARRY G. PARKER, CHESTER, PENN.

The Tinicum meadows lying just below Philadelphia, on the Delaware River, on account of their marshy nature and the quantity of insects and small quadrupeds which abound, offer temptation of no mean kind to the Barn Owl (*Aluco flammeus americanus*), and I know of five instances of their eggs having been found there during the past eight years:

April 13, 1877, Mr. Isaac Reiff, the well-known oölogist of Philadelphia, took a fresh set of five eggs.

April 13 and 15, 1881, the same gentleman took two more sets of four eggs each.

April 18, 1882. This year the birds had been much disturbed, and only laid two eggs, which were left for incubation.

April 12, 1885, I found a set of five fresh eggs.

These meadows are very low, and it is only by means of irrigation that they are rendered fit pasture land for the immense number of cattle which arrive from the west, and which are here allowed to recuperate and fatten before being slaughtered. The nests in every case were found in the recesses of some of the weather-beaten and blasted oaks which are here and there to be found, but which are growing fewer every year owing to storms. We never failed to detect the presence of the Barn Owls by means of the large pellets which they exude, and which are found lying

about the trunks of the trees where they have their nests.

[The above instances of the Barn Owl breeding near Philadelphia are of more than common interest, owing to the fact that it is comparatively a rare bird in that neighborhood.]

This species of owl appears to be more common in California than elsewhere, and it seems to lay more eggs in a set in that locality than it does further east. Seven and eight eggs are no uncommon number there, but who ever heard of that many being found in one nest in any other part of the country?—Ed.]

An Oological Axiom.

"I may here mention a fact in Oölogy, apparently not without its value. In measuring many hundred eggs, I have noticed that the variation, however great, is less in absolute bulk than in contour—in approach to, or departure from, what may be regarded as the standard of shape for the species. Now this variation in shape is produced mainly by difference in the length of the major axis, the transverse diameter being approximately constant. What additional variation in shape may occur, results from slight shifting of the point of greatest breadth toward one end or the other. Anatomical considerations bear this out. Taking the calibre of the oviduct as an approximately fixed quantity in the same species, and remembering that varying circumstances of age, season, and physical vigor, determine the amount of fluids secreted to envelope the ovum, it is evident that, while the whole capacity of the calcareous shell must vary correspondingly, the difference will be mainly in lengthening or shortening of the egg, since the contractility of the oviduct holds the transverse diameter newly fixed.

There are also few instances of greater differences in the amount, intensity, and distribution of pigmentary matter than those occurring among hawks, and even in eggs of the same nest complement. I think it a probable rule, that the succession of laying of the eggs can be judged by the quantity of pigment in the shell, those first extruded being generally the most heavily colored, the others growing lighter with gradual consumption of the color supply. This is strikingly illustrated in cases where the same nest has been robbed repeatedly—the later laid eggs gradually losing their coloration, as well as gradually growing smaller, with increasing exhaustion of the reproductive powers of the parent. Every poultry man is familiar with the extreme instance of this, when a hen drops an egg often no larger than a pigeon's as the final effort before ceasing to lay."—*Coues' Birds of the Northwest*, p. 347.

Early Breeding of Anna's Hummingbird.

BY W. OTTO EMERSON, HAYWARDS, CAL.

What will be thought of Anna's Hummingbird, (*Calypte annæ*), breeding on January 19th? Yet such is the case in this locality. The warm weather we had has opened a number of flowers, and gum trees loaded with their white bunches of bloom, raspberries in blossom, etc., no doubt made the birds think it time to commence nesting.

At noon, when our trimmer returned to the house for dinner, he told us that while at work cutting off a large limb of a pear tree, a female Hummingbird came around, and seemed to be very uneasy about something. He did not pay much attention to her, until she flew about his face. He then noticed a nest, very small and nicely placed on the twigs. As he walked over to another tree to rest the branch on it, she lit on the nest, and only took flight again on his putting it down. She then went back to where the limb had been cut off, and tried to perch on another place. It was no use. She knew something had been done to her home. He had meantime cut the twig off with the nest on, intending to tie it back on another limb. In sawing the limb off, the two eggs rolled out on the dead leaves. One of them was broken in the fall, the other had the end chipped, but picking it up he put it back, and then tied it in the fork of a large branch. He then stepped backward to see the result. The bird flew to the nest, sat down and commenced to dress her feathers, no doubt thinking it was all right.

I went out in the afternoon. The bird seemed to be uneasy, as she had missed the other egg no doubt as she kept flying from tree to tree.

The nest was placed on a twig, like a chicken's claw, where the branch forked out. There were five small twigs coming out, known to fruit growers as "fruit spurs." It was about seven or eight feet from the ground, on south side of tree, which was entirely denuded of leaves. The fact of the bird building on the southern exposure, shows her sense or instinct, for the most warmth to be had from the winter's sun. During the hot days of May and June they choose some cool retreat, along the shady creeks, or many blue-gum tree groves about Haywards.

The nest I took in this morning, Jan. 20th, as she had left it, and it would be soon pouring down rain. The Hummingbird was still around, feeding on the raspberry flowers, but she seemed sad and lost. The cold winds no doubt made her think that it would have been better to have waited or gone further south.

I had noticed this Hummingbird for some two weeks back, but did not pay any attention to her, little dreaming that she had begun nest-building, as they can be seen around the gardens all winter.

The little nest now sits before me on its chair of fruit spurs. It is composed of the usual cottony substance of thistle weeds, with a great quantity of feathers of the California Quail worked in. The outside is well covered with spider webs, fine threads of bark, and beautiful sea-green lichens are well distributed over the whole, with here and there a bit of dark green moss.

It is wonderful how they will put on these lichens with their long pine-needle like bill. I have watched them at work putting the webs over all by drawing their bills up and down, over the sides of the nest, as they sat thereon. The eggs were within five days of hatching, showing she had been incubating about six days, as it takes from ten to twelve days for these little mites to come forth.

I will here speak of an Allen's Hummingbird, (*Selasphorus alleni*), that commenced to build its nest on a running rose, under the porch roof, and within eight feet of the floor, in front of our bedroom window, on May 27, 1885. She commenced the nest on the end of the stalk, by bringing a lot of willow cotton and webs. She would place herself on the spot chosen, then with her bill, running it here and there around the edge of the bottom, picking out a bit here and there, to place some other in its place, then working her wings in a fluttering manner to shape the nest around her body. On May 31st she laid her first egg, although the nest was not all done yet. She laid some time before 10 o'clock, as I kept watch of her, and she had been sitting all day on account of the high winds blowing the long running rose stalk. By sitting close she kept the egg from rolling out. Once or twice she left the nest to get a bit of web or cotton, to put on around the nest. On June 1st she did not lay an egg as the wind was blowing hard all day. So she had to keep on her nest to save her egg. The nest swung like "the cradle in the tree-top," of nursery rhyme fame. The nest looked about half done, a great deal of cotton from the willows and the steamers of the Australian blue gum tree flowers. On June 3d one of the eggs got shaken out of the nest and was broken on the floor. Still she sat. On June 4th the wind was very violent and switched out the other egg. The bird would come to the nest, look in, and then dart away, hovering in the air, give two or three sharp rasping notes, and then fly off to hunt her mate to tell him of their fate. The nest still hangs there to the winter's winds.

A Season's Notes from Bristol County, Mass.

A Brief Review from My Note Book of 1885.

BY F. M. MERCK.—PART I.

As is usual in our New England climate, "winter lingered in the lap of spring," and our bird life did not arrive in force until late in May.

A warm spell in latter February and early March, brought a few Red-wings, and a Song Sparrow burst into song March 5th, but colder weather ensued, and I did not hear his sweet trill again until the 27th. A few Robins showed themselves, and now and then a Bluebird came about the house.

April 1st, was warm and bright, and to-day I noticed the first White-breasted Swallow of the season. Cowbirds and Pewees arrived a day or two later, together with the Meadow Larks.

April 7th, I visited my friend, Mr. "F. H. C.," and arrived at his house to find him absent on a day's collecting trip. In the afternoon he returned with a set of two eggs of the Barred Owl, thus showing that *Strix* kept up to date, despite the inclement season. During the fortnight spent at Rehoboth, the weather grew much warmer. Fox Sparrows appeared in numbers, and the vanguard of the Red-poll Warblers arrived. A Great Northern Skrike was shot April 16th, and both Junco's and Fox Sparrows were last observed on the 18th.

A Red-shouldered Hawk was seen building her nest in a tall oak tree; she seemed loath to leave her work, although I passed under it. My friend secured a set of two eggs from it April 27th.

The latter part of April was warm, and brought Barn and Cliff Swallows, Brown Thrushes and Black-and-White Creepers. The spring plumaged Yellow-rumped Warblers were very plenty, and do not resemble the modest autumn migrants.

Red-shouldered and Red-tailed Hawks are now laying, though the latter species is well along in incubating. One nest of the former found April 27th, with three eggs, and two nests the 28th, with three eggs apiece.

May 1st to 10th, very pleasant; Blue Yellow-backs, Golden-crowned Thrushes arrived on the 6th, Yellow Warblers and Wood Thrushes the 7th, Kingbirds and Spotted Sandpipers the 8th, and Chimney Swifts on the 9th.

Fish Hawks are not common in my section of this county, but from the colony on Palmer's River comes the report of "F. H. C." "Visited the Ospreys in company with F. W. A., May 8th, and found them with complete sets, though we failed to find any with four eggs, as we did in '84."

A nest of the Cooper's Hawk was found April 29th, with four eggs; this nest was in oak woods, and from the inside arrangement (lining of cedar strips) I am of the opinion it was an old habitation of *Corvus*.

Another nest of *Cooperi* found May 2d, was the same from which a set was taken in '84; the only instance I have noted of *A. cooperi* using the same nest for successive seasons.

My first Blue Jay's nest was found May 11th, and while despoiling it, a Sharp-shinned Hawk, doubtless attracted by the discordant screams of the angry Jays, dashed into the grove of pines and seizing a Jay, bore it to the ground, then suddenly catching a glimpse of me it flew away, while it's would-be victim shambled off, a badly scared specimen of *Corvide*.

May 10th to 20th, White-eyed Vireos, Baltimore Orioles, Redstarts and Wood Pewees arrived. Nashville Warblers are seen, and one fine male Black-and-Yellow Warbler; a rare migrant.

May 23d, I secured a fine specimen of the Rose-breasted Grosbeak, which I find from the testimony of several collectors to be quite rare in this county, and May 29th I had the good fortune to secure another, also a male; these were the only ones I have observed, and can find no authentic reports of its nesting within the limits of this county.

The male Scarlet Tanagers arrived here in force May 20th, and the females a few days later. These birds by reason of brilliant color and fine song are conspicuous features of our local Bird Life. Other birds are now breeding; two nests of the Black-capped Chickadee are found in birch stubs, open at the top, with a soft lining of rabbit's hair and wool.

Flickers and Downys are occupying their domiciles in old orchards and groves, and on May 29th I secured a pair of *P. villosus*, a very late date for these birds, which usually figure in our fauna as winter visitors. I am of the opinion they were nesting in the vicinity, or intended to do so, and my belief is further strengthened by the occurrence of their breeding at Rehoboth, where a hole was found in an old apple tree tenanted by a pair of Hairy Woodpeckers.

The set was four in number and advanced in incubation. This is the first instance on record of the breeding in this county, and I presume the fortunate collector (F. H. Carpenter) will give fuller particulars.

June 1st, the last migrants, the Black-poll Warblers, arrived last week, and bird life is at its zenith. A nest of the Field Sparrow in some low trailing briars, with four eggs, another of Chewink in a low bush with one egg, and several of the Catbird with a full complement of eggs are noticed.

I find several pretty structures of the Yellow Warbler, with uncomplete sets, in the alder bushes by the brook side.

The first week in June advances our birds in breeding still more. Wood Thrushes, Baltimore Orioles and Purple Martins are nesting, and I found a set of four eggs of the former in a nest placed on a fallen birch, and I have noticed that such places seem favorite situations for them to build upon.

The Purple Martins are decreasing in numbers and the usual reason of the "persecution of man" cannot be applied in this case, for two score of years ago no house was considered as finished unless a number of "martin holes" was bored under the eaves for the accommodation of these birds, yet notwithstanding the universal protection given them, the gables of our farm houses respond no more to their social twitters, and the "Cape Cod Swallows" are fast becoming less numerous in Bristol County.

A Trip to a Swan's Nest.

BY H. H. BRIMLEY, RALEIGH, N. C.

The following incident in connection with a bird whose nesting habits are little known this side of the water, may possibly be of interest to some of your readers. Some years ago the writer was an inmate of a large boarding school near the town of Bedford, England, and, in company with two other boys, employed many of the Saturday holidays in collecting eggs. On one of our expeditions, in the summer of 1877, along the banks of the river Ouse, some four miles below Bedford, we discovered the nest of a pair of Mute Swans, (*Cygnus musicus*), on a reedy island in the middle of the river, and at once resolved to add at least one of their eggs to our collection. On the following Saturday, my two companions, with myself, procured leave of absence and hurried off to the boat yard, where we were soon in possession of a light pair of oars for the afternoon. I had then in my possession a small silver-mounted, single barrel muzzle loading pocket pistol, of which I was exceeding proud, probably chiefly for the reason that I never could kill anything with it. It was duly loaded, capped and put into possession of the man at the helm. Pulling a steady stroke, and with many speculations as to the probably number of eggs we should get, we at length arrived in sight of our goal. We slowed up, then rowed beyond and all around the island to find out the whereabouts of the birds. We saw one (presumably the female) on the nest, apparently oblivious to our presence. The other we could not discover, so we ran our boat ashore at

the upper end, made her fast and prepared for the fray. All of us had a very wholesome respect for the prowess of the Mute Swan, being familiar with many tales of their attacking and grievously injuring sundry specimens of the genus *boy*, and therefore made preparations to repel the attacks of the enemy, should they show fight. My companions, each brandishing a scull, formed the van, whilst the artillery, under my command, defended the rear. We approached the nest cautiously and surrounded it. Emboldened by the passive attitude of its occupant, we carefully pushed the bird on one side, and by so doing, exposed to our delighted gaze three eggs, just one apiece. These were quickly appropriated and transferred to the pockets of the writer, and, allowing the old bird to resume her former position, which she did immediately, the retreat commenced. We laid the eggs on a bed of rushes in the bottom of the boat, got aboard and pushed off down the river. Just as we cleared the lower end of the island, the male bird was seen clambering up the bank and approaching his mate. We had not proceeded more than a few hundred yards when we saw him slide into the water and give chase. Finding swimming too slow, he raised his enormous wings, and, beating the water with his paddles, made a bee line for the boat. His whole appearance denoted excessive rage, and not wishing to engage in a combat with only our frail and narrow craft between us and about ten feet of not over warm water, we ran the boat ashore and jumped out, armed as before. On he came, still making the spray fly with his broad feet until within less than five yards of where we stood, when he slid into the water and swam backwards and forwards a time or two, as if hesitating whether or not to attack us. Finally he swam out into the middle of the river, raised himself out of the water, and again came at us, but as before, sliding down to a swimming posture before reaching land. This he repeated several times and at length left us and swam off up the river to rejoin his mate. I do not know whether he would have attacked us had we remained in the boat; certainly all his movements gave one the idea of utter fearlessness and excessive anger. In repassing the island on our way back, he was standing by the side of the nest, having apparently forgotten our existence.

The eggs were of a greenish white color, very variable in dimensions and shape and of a size proportionate to that of the bird. I regret that I cannot give measurements, but I unluckily broke the one that fell to my share some years ago.

The nest was simply a heap of rushes, with a depression in the top, some two feet in height.

THE ORNITHOLOGIST —AND— OÖLOGIST.

A MONTHLY MAGAZINE OF
NATURAL HISTORY,

ESPECIALLY DEVOTED TO THE STUDY OF

BIRDS,

THEIR NESTS AND EGGS.

DESIGNED AS A MEANS FOR THE INTERCHANGE OF NOTES
AND OBSERVATIONS ON BIRD AND INSECT LIFE.

FREDERIC H. CARPENTER, Editor,

REHOBOTH, MASS.,

FRANK B. WEBSTER, Publisher,

409 WASHINGTON, ST., BOSTON, MASS.

Editorial.

The American Ornithologists' Union Code and Check List of North American Birds, will undoubtedly be ready for the public by the date of this issue. We can but desire that the matter of a uniform check list for the use of ornithologists is now settled, and we hope it will avoid the confusion hitherto experienced, by having specimens labeled according to different nomenclatures.

The change in arrangement has been great, and it will need a complete overhauling and re-labeling in the cabinet in order to preserve the arrangement according to its dictates.

We insert the following at the request of the "Committee on the Protection of North American Birds," forbearing any comments at present.

PROTECTION FOR THE BIRDS.

Bird destruction in this country is every year assuming a more and more serious aspect. The startling decrease in the numbers of many of our birds, brought about of late years by the unceasing persecution waged for the sake of fashion, has aroused the American Ornithologists' Union to a recognition of the necessity for instant and decided effort in behalf of our birds. To answer this imperative demand the Union has appointed a "Committee on the Protection of North American Birds." This committee was lately organized in this city with the following membership: Mr. George S. Sennett, Chairman; Mr. Eugene P. Bicknell, Secretary; Mr. J. A. Allen, Dr. J. Holder, Dr. George Bird

Grinnell, Mr. William Dutcher and Mr. L. S. Foster, all of New York city; Mr. William Brewster, Cambridge, Mass.; Mr. Montague Chamberlain, St. John, N. B.; Col. N. S. Goss, Topeka, Kansas.

The objects of the committee are as follows:

1. The gathering of all possible information bearing on the subjects of the destruction and the protection of North American birds.

2. The diffusion of information among the people in respect to the extent of the slaughter of birds for millinery and other mercenary purposes; the wanton killing of birds in sport by men and boys; the robbing of birds' nests; the destruction of the eggs of rails, terns, gulls and other birds for food; and the marked recent decrease of many species resulting from this general destruction. The spreading of information, also, in respect to the utility of birds as a natural check upon the increase of insects injurious to vegetation, and with reference to their interest and value from an æthetic point of view. This with the object of developing a public sentiment in favor of the rigid protection of our native birds, a sentiment that will naturally spring up strongly and widely as soon as attention is called to the subject.

3. To encourage the formation of bird protective associations and anti-bird-wearing leagues.

4. The perfection of a statute for the protection of birds, drawn with regard to its availability for enactment by all the States and Territories, leaving, however, the game birds, properly so considered, to the care of the game protective associations.

5. The prevention of the collecting of birds and eggs for pseudo-scientific purposes, and the development of a system of co-operation between this committee and the various authorities to whom may be assigned the power of granting permits for the collection of birds in the interest of science.

6. The consideration of the best means for securing the enforcement of bird protective statutes.

The committee is desirous of collecting facts and statistics bearing upon the subject of the destruction of our birds, and will welcome information from any source. It also extends the promise of its hearty co-operation to all persons or societies who may be interested in the protection of our birds.

The headquarters of the committee are at the American Museum of Natural History, Central Park, New York city, where the officers or any of the members may be addressed.

—Forest and Stream.

A Probable Hybrid Between *Spizella* *Pallida* and *Spizella Breweri*.

While on a collecting trip in New Mexico last spring, I shot a specimen which I think is jointly referable to these species. It was also identified as being a probable hybrid of the above by Mr. Ridgway. The following is a description of the bird.

(No. 580, Author's coll.) Crown, dark ashy gray or clay color, thickly streaked with black, shading into a light yellowish brown on the edges of the feathers. The streaks are very clearly defined, much more so than in *S. pallida*. Superciliary line not as distinct as in *S. pallida*, but more so than in *S. breweri*. The markings and colors on the whole of the upper parts closely resemble those of *S. pallida*, but are a shade or so

darker. Throat, pure white, shading on the breast and balance of the lower parts into an ashy white, which, on the sides has a tinge of bay. Tail, uniformly darker than most specimens of *S. pallida*, feathers conspicuously edged with white; bill, dark brown and quite compressed; tarsi, brown. The following are the measurements in inches and hundredths: Length, 5.20; stretch, 7.20; wing, 2.50; tail, 2.35; tarsus, .69; bill, .30; color of irides, hazel; sex, ♂. The specimen was shot near Las Vegas, in San Miguel County, N. M., on May 11, 1885.—*Geo. L. Toppan.*

Practical Taxidermy.

BY FRANK B. WEBSTER.

CHAPTER VII.—LARGE ANIMALS.

With brain fairly reeling from the effect of running through several works by foreign authors* treating upon heavy work, each varying in detail, but all showing the same general plan. I will endeavor to give the simplest method. For large animals it is necessary that the frame should be strong, light and correct in delineation. The large amount of filling required makes it necessary that it should partake more of the character of a form or dummy. I would call your attention to the directions given for skinning small animals. The same directions are to be followed with the following variations: Skin legs down to hoof or end of toes, as the case may be. If the subject is very large it may be necessary to cut the skin open on the inner side of the legs, where it will be least seen after sewing.

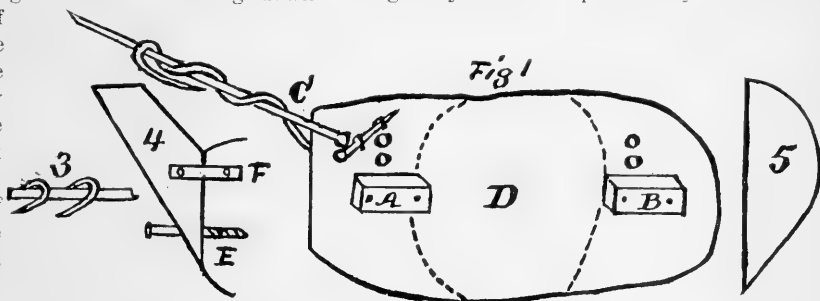
It is desirable that the leg bones should be retained if possible. If the subject has horns, skin to base of skull, sever the neck, and afterwards open the skin at top of neck and skin head as directed in previous chapter. Next carefully cut from skin all particles of flesh, fat and gristle, especially at feet, nose, lips, etc.,—make a clean job of it. It is now ready to cure. The popular way of treating it is with pickle made by the following proportional receipt: 4 pounds English table salt, 2

*I have carefully avoided reading any American work in order not to infringe on any original method advanced by their authors—on this particular subject. I am, however, obliged to depend somewhat upon the experience of others, my own being limited in this branch.

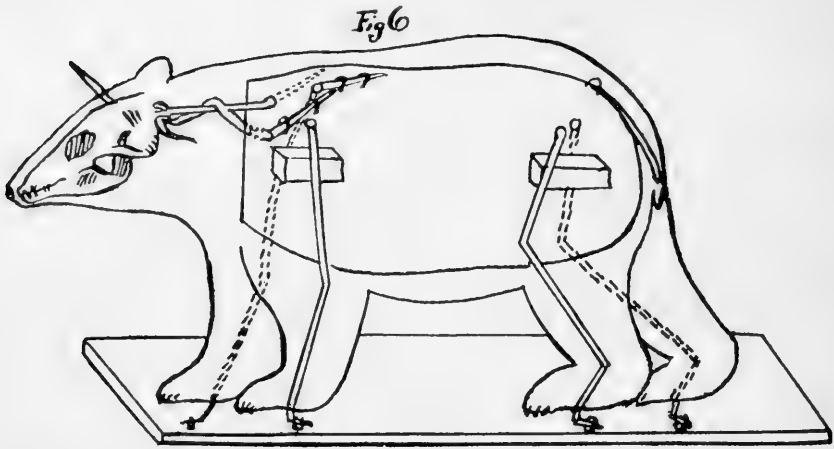
ounces saltpetre, 1 pound powdered alum, $\frac{1}{2}$ ounce corrosive sublimate, 2 gallons of water. (The corrosive sublimate should be dissolved in a little alcohol.) I would suggest using burnt alum as a substitute for the common, as it is of a dryer nature. For ordinary work a large wash tub will answer. Place the skin and bones in it and cover with the pickle. Large bones should have holes bored in them to admit the pickle.

(In warm weather a very little carbolic acid should be added—one ounce to ten gallons of the pickle.)

The skin should remain in this until thoroughly saturated. For a dog skin, twenty-four to forty-eight hours; deer skin, three to five days. I am informed that skins can remain in this pickle for a considerable length of time; but I should prefer taking them out and drying, and afterwards relaxing them when required. This pickle retains its virtue till skins show a tendency to become covered with slime; it should then be renewed. When the skin is taken out allow it to drain till the liquor has well run out and the hair is partially dry. With a sharp thin knife give it a good scraping or paring. Cut away all the superfluous hide. The more pains you take the better will be the result, the less the trouble from shrinking. In mounting heads alone some experts devote more time to this preparing of the skin than others to the whole job. Our skin now being ready we select a plank of $1\frac{1}{2}$ to 2 inches in



thickness and from 6 to 12 inches wide, depending upon the size of the subject. Saw it to length a trifle less than the original length of the body, (exact measurements must be referred to) round one end. This is for a body board. The top should be sawed to a curve about the shape of the back. Next bore holes in both ends for each leg wire and for two neck wires. Fasten the neck wires; if the specimen is not very large wind one of the wires around the other and turn the end back; the other wire, which is to go through the skin, will be strengthened by it. Fasten a block under each leg wire hole. The board and block on each side should be the ag



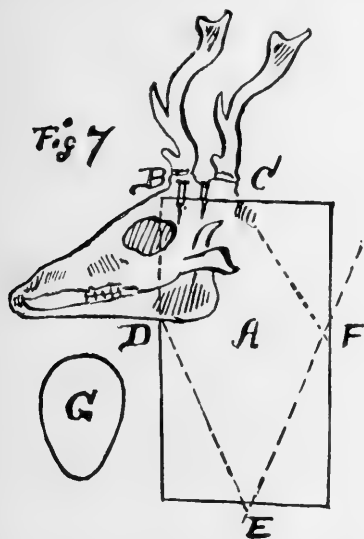
gregate thickness of the space between the leg bones in the original body. See fig. 1.

A—B, blocks; C, head wires. Supposing our subject to be a bear. We next fill the skull, moulding it with clay as near as possible to nature; then making a hole in the top (center of forehead) large enough for the wire. (Large animals may require rods, heavier than wire.) We force into its place in the skin. Next fill the upper part of the neck fairly full of cut excelsior. Put in leg wires in manner previously described, winding the wire and bones carefully with tow and excelsior, to imitate the original legs. Now take the board and force the head wire up the neck through the skull and skin; cut a hole in the skin exactly over the hole in the skull. Be careful about it as it will act as a guide. (Some merely fasten the wire to the skull and then force the skull and board in at the same.) Next pass the leg wires through the proper holes, at right angles to the board; bend them and fasten by staples as shown in fig. 3. If the animal is short-tailed, pass wire in and fasten to board; if long-tailed, cover tail wire with tow, (use glue) building it to the size of the stump that was removed. Force it into the skin and fasten to board; use care to have the length correct.

Our body is now completely wired. Make two pads to fill the space D, between the fore and hind legs—shape of section 5—and dotted lines. Build them firmly of excelsior, winding with fine wire. Give a coat of glue and place pads in position; bind them down with wire in same way; pad the board in other places till it is about the natural size. You can now complete the shaping with fine cut excelsior, tow, and clay, as the case may require. (Some French writers use thin plaster casts, taken from the body, to complete the finish.) A point is here reached where skill

can be displayed. The whole can be given a coat of clay, but I think in ordinary cases it would be a waste of time, except in special places as already referred to. All being ready, bend legs into position and sew up skin. For heavy work a hand guard of leather is required. Any saddle maker can give advice in regard to its construction. Place the specimen on base board and bend it into shape—the desired attitude. See that every bump and depression is exact. If more filling is required, cut open the skin and insert it; if too full, depress it or take out filling. The head will be the last act. Carefully adjust the nose, lips and eyelids, using putty or clay and cotton. Putty I think works best for this last, but have it free from oil. *Set the eyes in putty.* Adjust ears as described in last chapter. If the mouth is to be left open, the tongue should be skinned and stuffed, or one be made of clay or papier maché. It and the lips, gums, etc., can be covered with the following: Heat common beeswax with enough powdered resin to make it hard. Apply when warm. This can afterwards be colored. (Combs and wattles of fowls can be treated in the same manner.) If there is a tendency of the skin to sag, it can be held in place by the use of bandages. An English writer suggests cutting out pieces or sewing it in; but the principle is wrong. Fig. 6 will show the position of the board and wires in the skin.

If the subject has horns, so as to make the head heavy, both wires should pass out through the skull at two points and a wood brace should be used, which can be fastened to the body board by an iron strap and screw. See fig. 4. The neck wires passing on each, care must be used to have the brace of the right length and angle; a wire band should pass around the brace and neck wires. The fastening, etc., can be made through the opening in the neck.



We will next consider mounting of heads. A very simple way to form a frame work is to use a board, say two inches thick. See fig. 7, A. Fasten the skull by using screws at B. Saw from D to E to get elevation of nose, from C to F for thickness of neck, and from F to E to get pitch of head. Carefully measure skin so as to see that neck board is not left too long. Next cut a base board, G. Fasten the neck board at E, F; build around the neck board with excelsior, cover it and the skull with clay, moulding it correctly. The skin can be drawn over this and tacked to the under part of the base board.

We next consider flat skins. For these it will be necessary to make our dummy completely, legs and all; if there is no skull one must be made on the dummy, and moulded with clay. All must be complete. Great care should be exercised that the form is not made too large. The skin can be stretched some little, but only to make up what it lost by shrinking or accident. When the dummy is ready, soften the skin by soaking in cold water; watch it carefully so as not to have it remain in too long; drain it; treat it as a cover to the dummy. If the hair is off in places, by patience you can take hair from other parts and adjust them by sticking. This can be so nicely done as not to be detected, and is practical.

For very large animals, such as buffalo, sections of $\frac{1}{2}$ inch board, should be sawed, shape of fig 5, and fastened to the body board, and cross slats fastened. This can be covered and will make the body light. M'Vickary in stuffing a whale in Boston a few years since, had the entire form built of wood, covering the ribs with thin sheathing.

The Connecticut Warbler.

(*Oporornis agillis*).

BY C. M. JONES, EASTFORD, CONN.

I made my first acquaintance with this bird in the autumn of 1886. It was on the 30th day of September that I was making my way through a large boggy meadow where the grass had not been cut and stood fully two feet high, hoping every moment to start up something that might be an addition to my collection. I was just approaching the edge where the ground began to rise slightly and a different kind of grass grew, when up started a bird from the ground and flew a few rods into a growth of bushes and small trees. I saw her light in one of the trees, where she ran along on the nearly horizontal branch very much as I have seen the Golden-crowned Thrush do. I supposed it was that species and thought I would save the specimen for the autumnal plumage, so advancing a few paces within reach I fired. But on picking up the bird I saw that it was quite another species, and took it to be a Mourning Warbler until I noticed the white ring around the eye.

Again on the morning of October 5th, I went out for a short ramble, and while walking along by the edge of a swampy thicket I saw a bird rise from the ground and dart into the bushes. I was quite near and could see as she paused for a moment, that it was the same species as that which I had captured a few days before. I was too near to fire, and while backing off she disappeared and no amount of searching enabled me to discover her again. Going on further to a little swamp of about a couple of acres where mosses and skunk cabbage and various kinds of reeds grew I waded through it near one side and back again near the other without starting anything till I stepped out onto dry ground, a hay field, when I saw another bird rise from the grass and hurry into a clump of low bushes. Such movements were becoming familiar. I waited a long time, and could see the bushes move as the bird kept hopping about among them, but not a glimpse of the bird herself, though I felt sure that she kept an eye on me all the time. At length all motion ceased and I finally beat the bushes through, but she had evidently retreated to a safer place. Somewhat disappointed I started for home, but concluded to take in, on my way, the place where I had seen the other bird. As I came near she started up again and was in the bushes in a twinkling. As she paused for a moment on a branch, though very near, I dropped my gun quite below the mark

and fired. On taking her in my hand I found that I held a somewhat mangled Connecticut Warbler.

These birds were both extremely fat, so that it was difficult to skin them, and quite impossible to make satisfactory specimens of them. The first bird proved to be a female, the other was so injured by shot that I could not determine the sex. So short a study does not give one a very full knowledge of their habits, but so much I learned, that in autumn they seek for food on the ground, in open land, but near some covert into which they hasten when alarmed, that they are very restless at such times, yet conceal themselves carefully and still manifest considerable curiosity toward an intruder and are silent. In the spring they may appear very differently.

Last Dates of Migratory Birds Observed in the Fall of 1885, at Montreal and Vicinity, Canada.

BY ERNEST D. WINTLE, MONTREAL.

- Aug. 1, Indigo Bird.
 " 8, Chipping Sparrow.
 " 9, Tyrant Flycatcher, Summer Warbler.
 " 15, Catbird, Red-bellied Nuthatch, Barn Swallow, White-bellied Swallow.
 " 16, Purple Martin.
 " 17, Baltimore Oriole.
 " 22, Red-eyed Vireo, Black-and-White Creeper, and Sharp-shinned Hawk.
 " 28, Nighthawk.
 " 29, Redstart, and Olive-sided Flycatcher.
 Sept. 5, Chimney Swift, Black-billed Cuckoo.
 " 12, Golden-crowned Thrush, and Yellow-bellied Woodpecker.
 " 15, Wild Pigeon.
 " 17, Cedar Bird, Golden-winged Woodpecker, Purple Grackle, and Broad-winged Buzzard.
 " 19, Wood Pewee, Pine-creeping Warbler.
 " 26, Yellow-bellied Flycatcher, and White-throated Sparrow.
 Oct. 10, Wilson's Thrush, Pigeon Hawk, Yellow-rumped Warbler, and Black-throated Green Warbler.
 " 11, Goldfinch, and Winter Wren.
 " 18, Song Sparrow, Downy Woodpecker, Black-capped Chickadee, Purple Finch, Ruby-crowned Kinglet, Hermit Thrush, Blue Jay, White-bellied Nuthatch, Great Horned Owl, Pine Linnet, and Wilson's Snipe.
 " 25, Wilson's Snowbird.
 " 31, Robin, and Brown Creeper.
 Nov. 11, Hairy Woodpecker.

Nov. 17, Bluebird.

" 21, Crow.

The following species, mentioned in the foregoing list, are seen occasionally throughout the winter here: Cedar Bird, Downy Woodpecker, Crow, Black-capped Chickadee, White-bellied Nuthatch, Great Horned Owl and Pine Linnet.

A Plea for the Hawks.

BY FALCO.

The common idea among farmers is that Hawks are their worst enemies among the birds, and that they cannot do better than exterminate them. That such a conclusion is an error was conclusively shown by Mr. B. Harry Warren, in his paper on "Diurnal Rapacious Birds, with special reference to Chester County, Pa.," which was published in the Report of the Pennsylvania Board of Agriculture for 1883.

Mr. Warren dissected a large number of Hawks, which were shot and trapped in Chester County during a period of eight years, and found the contents of their stomachs to be as follows:

RED-TAILED HAWK, (*Buteo borealis*), 102 birds examined. "In 81 chiefly mice and small quadrupeds, also some few small birds; 9, chickens; 3, quail; 2, rabbits; 1, ham-skin; 1, a part of a skunk; 1, a red squirrel; 1, a grey squirrel; 3, snakes."

RED-SHOULDERED HAWK, (*Buteo lineatus*), 36 birds examined. "23 showed mice and small quadrupeds, grasshoppers and coleopterous insects; 9, revealed frogs and some few insects; in 2, snakes and portions of frogs were present; and from the remaining two, small birds, particles of hair, and a few orthopterous insects were taken."

BROAD-WINGED HAWK, (*Buteo pennsylvanicus*), 12 birds examined. "4 revealed mice; 3, small birds; 4, frogs; 1, killed the 22d of May this present year, (1883,) was gorged with cray-fish, with which were traces of coleopterous insects."

SPARROW HAWK, (*Tinnunculus sparverius*), 29 birds examined. "15, principally mice, with frequent traces of various insects; 6, grasshoppers; 2, coleoptera and grasshoppers; 2, Meadow Larks; 4, small birds—sparrows."

COOPER'S HAWK, (*Accipiter cooperi*), 27 birds examined. "14 showed the food taken to have been chickens; 5, revealed small birds—sparrows and warblers—*Dendroica*—2, quail; 1, bull-frogs; 3, mice and insects; 2, hair and other remains of quadrupeds."

SHARP-SHINNED HAWK, (*Accipiter fuscus*), 15 birds examined. "6 of this number showed small birds; 3, quail; 1, mice; 4, remains of young chickens; 1, grasshoppers and beetles."

AMERICAN ROUGH-LEGGED HAWK, (*Archibuteo lagopus sancti johannis*), 9 birds examined. "All showed their food to be exclusively field-mice."

MARSH HAWK, (*Circus hudsonius*), 11 birds examined. "5, revealed mice; 2, small birds—*Dendracu*; 3, frogs; 1, a large number of grasshoppers, with a small quantity of hair, evidently that of a young rabbit."

DUCK HAWK, (*Falco peregrinus naximus*), 1 bird examined. The alimentary tract of this bird was void of all food. The gentleman, however, who presented it to me caught it in a steel trap, and advised me that it had robbed him of several fine hens."

PIGEON HAWK, (*Æsalon columbarius*), 3 birds examined. "Two of the three specimens which I have obtained showed remains of the common pigeon."

Mr. Warren states that of the above 245 examinations made, "with the exception of the Sparrow, Cooper's, and Broad-winged Hawks, have mostly been made during the autumn, winter and earlier spring months," and "that this observation is made owing to the fact that it is argued by many that the *Rapacia* are most destructive to the rasorial birds during the hawk's breeding season."

An examination of the above list will show that the diet of hawk's does not by any means consist entirely of chickens and useful insectivorous birds, but that on the contrary the contents of their stomachs would seem to indicate that they do more good than harm. If they occasionally help themselves to some old hen or young chicken is not the good service they do in ridding the fields of vermin more than an equivalent, and is not the laborer worthy of his hire?

The fact that one person was able to kill two hundred and forty-four hawks in one county, (for Mr. Warren speaks as if he procured them all himself except the Duck Hawk), in eight years shows the extent to which these birds are destroyed. Mr. Warren killed them in the interest of science it is true, but many others have probably killed nearly as many in the same period merely because they were hawks. Let this wholesale destruction cease, and let the farmer pause and consider whether he is not killing his best friend.

Longevity of Mockingbird.

Mrs. Hattie Holmes, 51 and 54 Main street, Woonsocket, R. I., lost one of her feathered pets Feb. 10, 1886, by death, the deceased being a Mockingbird, which lived to the advanced age of seventeen years, the usual longevity being only six.—*Woonsocket Reporter*.

ENTOMOLOGY.

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Editorial Notes.

We would call the attention of our readers to the timely and instructive article on "Collecting Cychrus," by L. E. H., in this issue. We are promised another article from the same writer for April, and as they are all based on practical experience, they will well repay a careful perusal.

Prof. S. A. Forbes, State Entomologist of Illinois, has discovered and proved by repeated experiments, that many species of larvæ, notably the cabbage worm, may be easily disposed of by a new method, viz., the introduction of bacteria into their systems. In many parts of Illinois the cabbage worms were dying as if stricken by a plague. He found that they were filled with a species of micrococcus, which could easily be propagated artificially. One drop of fluid taken from a diseased worm was sufficient to whiten a vessel of beef broth with myriads of these organisms in from two to three days. A pint of this mixture in a barrel of water sprinkled on the leaves of the cabbage is sufficient to introduce the disease, and as it is very contagious and fatal it is well worthy of a trial. Will not some of our readers try the experiment on other larvæ, more especially the canker worm, and report progress.

Practical Entomology.

BY WRIGHT AND BATES, 73 HANOVER ST., BOSTON.

(Continued from page 29.)

ORTHOPTERA.

PECULIARITIES: Anterior wings are long, narrow sheaths, thickly veined, over-lapping at the base, and without scutell; posteriors large and thickly cross-veined, and folded longitudinally, like a fan, when at rest. Transformations incomplete. Pupæ active and resembling the imago in most respects.

LOCALITIES: The *Grillide*, or crickets, are found under the stones, or hopping about on the green fields, hills and pastures.

The *Locustarie* (locusts) and the *Acerydii* (grasshoppers) inhabit the fields and pastures, where, in the warm season they may be seen in countless numbers hopping and flying about.

The *Phasmidae* (spectres) and the *Mantide* (mantises) are on the trees and shrubs, and on the vegetables in the gardens.

The *Blattariae* (cockroaches), under the stones, sticks, rubbish, and the bark of dead trees, and in damp places in houses.

The *Forficulariae* (ear wigs) are found in the flowers, and on the stalks of plants at the base of the leaves. This family is most plentiful in the summer, when its members may be taken with the net, but are often found in the winter buried in the ground.

NEUROPTERA.

PECULIARITIES: Four membranous, transparent wings, generally large and nearly equal sized, and finely veined. Transformations varied, some complete, others more or less incomplete. Some pupae active, and some inactive.

LOCALITIES: The *Termitidae* (white ants) live in the ground, in decayed wood, and beneath stones.

The *Ephemeridae* (May-flies) and the *Libellulidae* (dragon flies) swarm about the damp, low meadows, and over the streams and ditches.

The *Homerobidæ* (aphis-lions and lace-wings) are found on sandy plains near the margin of the woods, and about vegetation where plant lice abound.

The *Phryganidae* live in and about stagnant water.

The *Psocidae* may be seen running about on tree trunks, palings, amongst vegetation, and some varieties in houses, where they often do much damage to books and natural history collections.

Nearly all of this family must be taken in the summer time, some with the net, but most of them can only be discovered by the closest observation, and very delicate manipulation is necessary.

HYMENOPTERA.

PECULIARITIES: Four naked membranous wings, the anteriors being larger than the posteriors. Abdomen furnished, among the females, with a variety of ovipositors, such as stings, borers, saws, &c. Transformations complete. Larvæ inactive, worm-like, without legs. Pupæ inactive.

LOCALITIES: The *Apidae* (bees), the *Ichneumonidae* (ichneumon flies) and the *Vespariæ* (wasps) spend the most of their days flitting about over the bushes and flowers, especially the asters, golden-rod, and button-bush, while the latter are also often seen basking on the sunny side of walls and buildings.

The *Formicariæ* (ants) can be taken on the flowers and trees, or from their nests in sandy

ground; they are also found in winter, hidden under the bark of dead trees.

The *Cynipidae* (gall-flies) and the *Tenthredinidae* (saw-flies) haunt the trees and bushes.

The *Chrysulidae* (cuckoo flies) run and fly about in the warm sunshine, over the sides of the trees and posts.

The *Moceridae* (horntails) are often taken in the winter from decayed trees, whence they emerge, from the chrysalis, in the spring, to attack the evergreen trees, on the bark of which they may be seen in the summer, depositing their eggs or flying about seeking the proper locations.

The time to collect the members of this family is in the warm season, when they may be taken by means of the net as they hover about or light upon the flowers, but the collector need not be idle in the winter, for many may be found hidden in the crevices and under the bark of dead trees.

Sphingidae of New England.

III. S. GEMINATUS.—Say.

Palpi reddish brown; head and tegulae, pale grey; thorax pale grey with a deep chestnut, dorsal patch; abdomen brownish-grey, with a deep chestnut spot at the extreme posterior end. Anterior wings grey, tinged with rose color; an angular brownish basal line, bordered with rose grey, extends across the wings, with the apex towards the base; a ferruginous brown patch occupies the centre of the wing, is connected with the outer margin by an oblique line, of the same color, inclined towards the base and with the second running directly to, and nearly at right angles with the margin; the discal spot pale, margined with brown; a light brown band margined before with darker, crosses the base of the nervules, and is followed by two or three undulating bands alternately rosy-grey and brownish; a deep brown semi-oval spot, edged with whitish, at the tip; and a ferruginous brown spot above the inner angle; middle of terminal space dark brown.

Posterior wings rosy, bordered with grey, with an ocellate black spot, with two or three blue pupils, a short, broad black line shade on the inner edge with chestnut brown, connects this spot with the inner angle.

Under side brownish grey. Anteriors rosy at base, with a dark line, often nearly obsolete, extending across the base of the nervules followed by three or four alternate brown and grey lines, the ends of the grey lines at the costal margin being of a light dove color; the semi-oval spot at the tips is very prominent and the nervules, which

cross the dark terminal space are shaded with light chestnut brown. Hind wings grey, with a broad dark chestnut band across the wing, interrupted by a whitish comma-like mark near the sub-costal vein; this band is followed by two whitish lines nearly obsolete at the sub-costal margin. Marginal space brown, with a dark chestnut spot at the anal angle. A short pale grey line at the tip, and the fringe at anal angle dove color. Legs to the tibiae chestnut brown, thence pale grey.

IV. S. EXCAECATUS.—*Abb.*

Palpi and head fawn color with a slight roseate tinge; thorax of the same color, with a chestnut colored dorsal stripe, tapering anteriorly, and on the metathorax a transverse patch of the same hue; abdomen fawn color with a dark brown dorsal stripe. Anterior wings fawn color, with a dark brown median patch, containing a blackish discal spot, of a darker hue anteriorly, inclined toward the inner angle, with a purplish line connecting it with the base of the wing, and joined at an acute angle by a patch of the same hue, about the middle of the sub-median nervule; two or three brown lines cross the middle of the nervules, nearly parallel with the median patch, followed by an irregular brownish band; marginal space brown, with a small brown spot at the inner angle, above which are two or three black spots; there are also several blackish lines nearly following the direction of the nervules. Posterior wings rose color in the center, with a brownish patch at tip crossed by two or three short whitish lines; an ocellate black spot, purpled with pale blue near the anal angle, with two or three whitish lines between it and the inner margin; posterior margin fawn color.

Under side light fawn color. Anterior wings roseate at the base; two or three brown lines, alternating with lighter ones shaded at the tip with white, cross the center of the nervules; marginal space a dark fawn color with an orange colored patch near the inner angle. Posterior wings with two or three lines, identical in color and connecting with those on the anterior wings, followed by an orange band parallel with these lines. Expanse about three inches. Occur in May to July.

Mature larvæ which may be found about the last of September, is apple green, paler on the back, with numerous white-tipped granulations; a stout bluish green caudal horn; seven pale yellow oblique stripes on either side, the last one quite bright yellow and extending to the horn.

Pupæ chestnut brown, smooth, with terminal spine. Transformation subterranean.

Food: plants, apple, plum, will cherry, and sometimes found on the wild swamp rose.

Are the Lost Mandibles of Coleoptera Reproduced.

On the 17th of January last, I took from a crevice in the bark of a pitch pine tree, a ♀ specimen of *Catogenus rufous*. A subsequent examination showed me that the right mandible had been broken outwardly—carrying the antenna with it—and remained attached to the head by only one—the outer—corner. In its place a false mandible or process had grown, slightly longer, more flattened and less pointed than the original. The outer edge had grown to the broken base of the mandible. The extremity was hard, dentated and fairly calculated to take the place of its predecessor. It is a well known fact that in many species of animals—notably crustaceans—lost members are often replaced, though the new one seldom acquires the size and strength of the original. This is the first time in all my experience as a collector, that a case of this kind has come under my notice, though I believe similar instances have been observed by others.—*Cyanide*.

Collecting Cychrus.

L. E. II.

As a rule amateur collectors think insects are to be found only in summer. This is a great mistake as far as the Coleoptera are concerned, specimens being obtainable at all seasons of the year.

Winter is not prolific in insect life, to be sure, but if you know where to look you will secure many desirable species rare at other seasons; this is especially true of the beetles living under the bark of trees.

But it is in the early spring the collector should be active if he would secure a few species of *Cychrus* for his collection. The species of insects comprising this interesting genus are just rare enough to be favorites with most collectors, but this comes partly from the lack of knowledge respecting their habits. As well try to find *Cicindela* on the surface of water as *Cychrus* in the ordinary way. With the possible exception of *Cychrus elevatus* they are rarely seen under stones. Most species prefer to live under leaves as companions to the various land snails, and are comparatively common in early spring.

As soon as the snow is off the more open ground, take your bottle of cyanide, a stick, and all your patience, go to some sunny side hill on the borders of a forest, carefully turn over the leaves that lie on the ground, as well as every stone that is partly covered with leaves, and search diligently for beetles. The stick is good enough

at first, but on the first sign of a snail or beetle, discard it for your fingers, and work slowly or you will overlook your game.

Cychnus lecontei and *C. stenostomus* have a way of standing upright on the very tips of their tarsi and remaining perfectly still in this position for several minutes after they are disturbed. Many escape capture by this artful manœuvre, being readily taken for anything but beetles.

Experience has taught me not to be discouraged if at first my search proved fruitless. To be successful, a good locality must be found, and this may be a difficult thing to do. *Cychnus* seem to have some eccentric ideas regarding their habitat. In Pennsylvania I found them on the woody banks of rivers; in Connecticut on the south side of thinly wooded hills; but like many other insects they prefer the border to the interior of the forests.

A few days at this season of the year could well be devoted to collecting under stones and leaves, and it would pay well even if the species of *Cychnus* were poorly represented in your total, for many other rare *Carabidae* can be found now that are unobtainable later on, and it will be policy to keep all you find, for most of them can be readily exchanged for other species.

CORRESPONDENCE.

The Medium of "Bird Protection."

EDITOR OF ORNITHOLOGIST AND OÖLOGIST—Sir: Surely the protection of our birds is an important work for ornithologists to devote their labors to, and anticipating somewhat (from the circular of the A. O. U. committee) the methods to be adopted, I would suggest that it would be unwise to rigidly exclude all amateur students in ornithology from collecting specimens, even if they are not conducting their work according to the plans adopted by the "scientific association collector." It is rather harrowing to the "human nature" of the amateur who devotes only a portion of his leisure time to his favorite science, to be debarred from further investigations through the influence of men, who in their association "organ" relate the comparison of specimens from their collection, with a cabinet number of over ten thousand, with specimens from some equally overstocked cabinet of another "scientist." No. Such laws will not work, our Republic affords equal liberties to every one, provided the principles and intentions are alike, regardless of associations or pecuniary worth.

But the evils of collecting birds for millinery purposes, the committee of the A. O. U. will do well to check, and moreover I think the persons engaged in such nefarious traffic show a lamentable short-sightedness in business principles, for such havoc as they perpetrate will tell sadly on the deficiency side of bird life, and some morning they will wake up and, like Othello, find their "occupation gone."

That such persons will feel loth to forego a business by which they "make money" I am aware, and would give them a hint. A taxidermist friend of mine has made a snug sum this past season by making hat ornaments—

which by the way require neither conformity of shape or durability—from the dyed feathers of the common fowl, purchased cheaply from poultry dealers, and mounted on "forms," and he asserts that he realized a larger profit than when dealing in birds.

I think that the dealers (in stuffed birds, skins and eggs) who carefully conduct their business, should not be too severely criticised, for by them an opportunity is afforded for disposing of duplicates for desiderata from distant localities.

Perhaps the "ubiquitous small boy" who cannot appreciate or care for the fragile beauties, should be kept from collecting eggs, and in this case, a word from interested parents would prove more successful than legislative enactment; but when in mature years our young men (or ladies) desire to learn more of ornithology and possess a collection illustrative of their exploits, is it not better to encourage and advise them as to the proper methods, rather than to take the privilege away; and I would add that it would be better for the morals of our youth to pursue some such recreation during their leisure hours than to frequent some places—which I will not mention—during such times.

In view of present facts, I would advocate that if permits to collect birds are to be granted to *any* then *all* be accorded the same privilege; each one giving some proof of their individual interest in the science, such as specimens of their work (of preservation of objects), and witnesses as to the veracity and extent of their collection, added to this a promise not to deal in "millinery specimens," and with a limit set as to the number of specimens of each species, I am of the opinion that every *sincere* student of ornithology and oölogy can proceed with his work without exterminating our birds.—C. H. Freeman.

The Camera as a "Field Necessity."

EDITOR OF ORNITHOLOGIST AND OÖLOGIST—Sir: In the last issue of the O. and O., I noticed your remarks, briefly setting forth the value of the camera to the ornithologist, and recommending it as a "valuable field adjunct."

After seven years' experience with the art as applicable to field, I can speak in stronger terms, and call it a "field necessity"; a few contrivances of my own invention, allowing me to focus a nest, even though it be in a tall tree, which, if it will admit of being ascended, the camera can be easily brought up, and dispensing with the "tripod," it can be operated with success.

A small size, 4x5, will be found the most handy in a day's tramp, and photographs of good quality may be secured with an instrument of low price, if of that size. A few dry plates can be carried in a light, tight box, in the coat pocket, or better still in the plate-holders, and nothing is required after the exposure, save to preserve from contact with light, until some leisure day, when in the bringing out of the latent image and printing the photos, one can again live over his pleasant trips a-field.—D. H. French.

W. T. M.: The Pileated Woodpecker (*Hylotinus pileatus*), is a resident in only the heavily wooded and mountainous parts of New England; and we think your informant must have been mistaken when he alleged to having shot one in Connecticut.

R. C. RICHMOND, Portland, Me: In our own experience of preserving skins we have never found a substitute for arsenic, or some compound into which it enters largely as an ingredient.

RECEIVED: F. W. Andros, A. H. Lockett, A. L. Browne, Walter Hoxie, C. S. Brinley, F. H. Jackson, J. C. Cahoon.

— APRIL, 1886. —

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BOSTON, MASS., APRIL, 1886.

No. 4.

Aptoso-Chromatism.

BY WALTER HUXIE, FROGMORE, S. C.

The above name was suggested to me about a year ago, by Dr. Coues, to denote the "moultless color change" in the feathers of birds. I learn from him that it is an almost untried field of research in ornithology, and it is therefore with a great deal of diffidence that I now open the subject, hoping that the attention of others may be directed to this exceedingly difficult subject of study.

The physique of birds is eminently elastic. The feathers are a sensitive and highly organized class of tissues. What wonder then that they respond promptly to the annual changes which pervade all other parts of the birds' economy. That these changes are great none will deny. Compare the weight of a bird with the weight of its egg and consider for a moment what an enormous amount of animal substance has been in a few short weeks—almost I may say, days—developed. What wonder, then, that there is a reaction and that the feathers partake in it as well as the rest of the system. Why the color effects should be so much more marked in the male, than in the female, is no more occult a phenomenon than the superior brilliancy of the male plumage at all times. Neither is it a refutation of the theory that a change has occurred in the feathers because a marked difference in their color is not apparent. The male and female of many birds are identical in plumage at all seasons. But whereas the female has to make a large secretion of animal substance from her system to perfect the eggs, the male at the same season only develops a smaller amount of a highly specialized substance; his system is higher strung, so to speak, and the attendant phenomena more apparent.

How large a factor the food supply may be in the aptoso-chromatic phenomena I am still unable to estimate. That it is a factor at all, I am sometimes inclined to doubt. My notes upon

birds' food are not as yet sufficiently voluminous to determine this with certainty. In the merry days of Falconry the food was considered to have a marked effect upon the growth as well as the color of the plumage of young hawks. Dealers in cage birds often hint of secrets in feeding, for the development of color as well as song. For the present, at least, I consider it safe to eliminate the question of food altogether from a discussion of aptoso-chromatism and mainly to consider the changes consequent upon the preparation for a completion of the nuptial task.

During the past spring it was my good fortune to be able to examine a large series of specimens of the Bobolink; males in perfect feather but as yet not in full nuptial dress, showed little if any indications of swollen testes. On the other hand all males in full plumage, as it is called, had the testes swollen and turgid, although in fully half the specimens examined the moult was not completed; that is, they were not in as perfect feather as their less precocious comrades. This goes to show the independence of aptoso-chromatism from the regular phenomenon of moulting. In the fall no full plumaged males are ever seen in this region, and all of both sexes are in complete feather.

The rest of my recent notes on this subject refer mainly to the Summer Red-bird, the Cardinal and the Nonpareil. Among these three species the males seem to greatly outnumber the females, and only three mated males show full nuptial dress. This fact I have often noted. The parti-colored Red-birds, the duller Cardinals, who show much ashy edging to their feathers and the green male Nonpareil, all prove to be unmated. A parti-colored Red-bird was adopted by a female, whose full-plumaged mate had been shot, and in twenty-two days he himself was in full dress. The females of all three of these species show a decided change on the under parts immediately before toying. The Red-bird assumes almost an orange tinge, the Nonpareil a strong pinkish flush, and in the case of the

Cardinal I have several times taken a female of whose sex I was uncertain up to the very moment of dissection. A male Nonpareil, after the mid-summer moult, "fades out" in a few days to plain green and yellow, a few blue feathers in the top and sides of the head being the last to disappear as they are the first to appear in the spring.

Our migrating waders are the most difficult class of birds which I have studied in connection with aptoso-chromatism. I find, however, that the Black-billed Plover, Red-breasted Snipe, Sanderling and Turnstone show a tolerably even ratio between perfect plumage and the development of the sexual organs, independent of the stage of moult. In the Black-billed Plover this is the most apparent; specimens with full testes showed black "pin-feathers," while in those with small testes the pin-feathers were almost invariably white at the tips.

This exhausts my notes up to the present time. During the coming season I shall, from lack of time, be obliged to discontinue them, as my present engagements will necessitate a fuller investigation of birds' food than of other, and to me, more interesting data.

I expect and invite criticism. Most of my correspondents for the past few years, I think, I may now safely style converts, and I think that any one who will carefully dissect and make notes upon over a thousand specimens during the next season, as I have done during the past, will arrive at conclusions very similar to mine.

Florida Birds in January, 1886.

BY A. L. BROWNE, ORLANDO, FLA.

A few pleasant days at the commencement of the month ended in a storm on the 8th, followed by a very severe cold wave on the 9th, which lasted until about the middle of the month, then warm, sunny days followed until the last week, when came cool, rainy weather, the month closing with two or three parting sunny days.

The cold spell put a sudden stop to the increasing song of many of the birds and but little was seen of most species while it lasted. A few birds in the grove seemed to lose all fear of man and came about the house in search of food, paying but little attention to persons close by. A Red-poll Warbler in particular came at times within four feet of me as I stood on the porch of the house and a Blue-gray Gnatcatcher exceeded this by alighting on me for a moment on its way to the porch behind me. One House Wren went further yet, for finding an entrance above a door he en-

tered the house and went from room to room quite unconcerned as to any one's presence.

On the 13th, after the most severe weather was over I found quite a large flock of Yellowbirds among the grass in the pine woods, but saw none after that date. Before this I had seen no more than three together at a time. The 16th I found a large flock of Robins in an orange grove and about the adjoining pines. They uttered frequent alarm notes, but allowed me to approach quite near. In two days all large flocks had divided into scattered groups and single birds, which were distributed plentifully through the pine woods and occasionally entered the city. Their sudden appearance was probably due to the unusually cold weather, as they are not ordinarily found here in any abundance during the winter. They decreased little if any in numbers during the remainder of the month.

Beside the Robins, only two new birds were seen this month. Saw one Hermit Thrush in the high hummock on the 13th, and again on the 20th. A flock of Red-winged Blackbirds first appeared amidst a group of trees in the city early in the month and remained there during the cold weather. This species and the Purple Grackle became two of the most conspicuous birds of the month, flocks of both frequented the groves about the city and late in the afternoon large numbers were to be seen flying in straggling groups over the pine woods toward the swamps. One Brown Thrush seen in the high hummock on the 13th. Probably some one that was seen in December, but it had little of the shyness, which it then showed. Blue-gray Gnatcatchers not often seen.

Great Carolina Wren seen in a high hummock on the 13th and 20th. American Titlark frequently seen in small numbers; one good sized flock on the 28th about newly plowed land. Red-poll Warbler about as plenty as during the latter part of December. Maryland Yellow-throat not as plenty. Savannah Sparrow quite scarce, only a few solitary individuals seen. Grass Finch rather more abundant, usually in small flocks. Chipping Sparrow much more abundant, found frequently in very large flocks, unaccompanied by other species, the smaller flocks however usually contained a few Red-poll Warblers as before. Meadow Larks plenty on the 18th and 31st, seldom seen at other times. Whistling briskly on the 18th. Killdeer Plover still growing less plenty, rarely seen this month. Of the Heron family only the Great White Egret was seen on one or two days.

The warm weather following the cold spell, brought an increased return of song, and the notes

and actions of some of the birds seemed to indicate the approach of the breeding season. Blue Jays were conspicuous in this respect and Brown-headed Nuthatches, Yellow-shafted Flickers and Mockingbirds all showed a change in their manner toward each other. On the last day of the month I saw one of the Shrikes, which I mentioned as driving a Mockingbird about in December, fly from an old nest in this grove, and on examination found that a few new materials had been added. Last year this pair had a nest well advanced on the first day of January, though on account of stormy weather which delayed their work the first egg was not laid until Feb. 12th. This species frequently selects and rebuilds an old nest in which to breed.

List of Birds Observed in the Vicinity of Santa Barbara, Cal., During the Year 1885.

READ BEFORE THE SANTA BARBARA SOCIETY OF NATURAL HISTORY, JAN. 26, 1886.

BY CLARK P. STREATOR. PART I.

(The nomenclature is that of the Smithsonian Check List, by R. Ridgway, 1881.)

Hylocichla ustulata swainsoni, (Olive-backed Thrush). Common winter resident.

Merula migratoria propinqua, (Western Robin). Winter resident. More abundant during a year when there is plenty of rain-fall; sometimes, however, they can be seen in flocks of hundreds.

Hesperocichla nœvia, (Varied Robin). Rare winter visitor. I have never collected but two specimens of this beautiful thrush.

Mimus polyglottus, (Mockingbird). Resident. This charming songster is beginning to be found quite common in our gardens and orchards. I have never found its nest.

Harporhynchus redivivus, (Californian Thrasher). Common resident in wild places. Breeds. This thrush is a very fine singer.

Cinclus mexicanus, (American Water Ouzel). Rare. A few specimens of this bird have been observed high up in the mountain canons.

Sialia mexicana, (Californian Bluebird). Resident. More common in winter than in summer. Breeds.

Phainopepla nitens, (Black-crested Flycatcher). Summer resident, not common. Breeds.

Poliotilta plumbea, (Plumbeous Gnatcatcher). Common winter resident. These little birds are most always found in company with the flocks of Least Tits.

Regulus calendula, (Ruby-crowned Kinglet). These fearless little birds are an abundant winter

resident, and when seen they are most always busy catching insects from the bark of trees.

Chamaea fasciata, (Ground Tit). Common resident. Breeds.

Lophophanes inornatus, (Plain Titmouse). Not common. I have found it in all seasons except summer. I think then it only goes back from the coast into the interior valleys to breed.

Psaltiriparus minimus, (Least Tit). Abundant resident. Breeds. I found as many as forty nests last season.

Sitta carolinensis aculeata, (Slender-billed Nuthatch). Rare spring migrant.

Salpinctes obsoletus, (Rock Wren). Rare spring and fall migrant.

Thryomanes bewicki spilurus, (Californian Bewick's Wren). Resident through the winter months.

Troglodytes aedon parkmanni, (Western House Wren). Abundant summer resident. Breeds. This wren is the most common of any of the birds found in this locality.

Telmatorhynchus palustris paludicola, (Tule Wren). Common winter resident about tules and marshes.

Anthus ludovicianus, (American Titlark). A very common winter resident along the seashore.

Helminthophaga ruficapilla, (Nashville Warbler). Rare. I have observed but one specimen.

Helminthophaga celata, (Orange-crowned Warbler). A rare migrant.

Dendroica aestiva, (Summer Yellow Bird). Common summer resident. Breeds.

Dendroica auduboni, (Audubon's Warbler). A very abundant winter resident. They are very beneficial to fruit growers, destroying more insects than any other species found in this locality.

Dendroica townsendi, (Townsend's Warbler). Rare migrant; only seen occasionally.

Geothlypis trichas, (Maryland Yellow-throat). Common resident. Breeds; but I could never succeed in finding its nest, as it breeds in the tules where no small nest can be easily found.

Icteria virens longicauda, (Long-tailed Chat). Not common as a summer resident. Breeds.

Myiodytes pusillus, (Black-capped Yellow Warbler). Rare. I shot one specimen, a very fine plumaged male. This is the only one I have known to be found in this locality.

Vireosylva gilva swainsoni, (Western Warbling Vireo). Resident. More common in winter. Breeds. I found one nest in a live oak tree that was composed of lichens and contained five young ones, only a day or two old.

Lanius ludovicianus robustus, (Long-billed Shrike). Common winter resident, but the greater

part of them pass southward about the first of October.

Amphelis cedrorum, (Cedar Wax-wing). A regular winter resident. Some winters they are found in flocks of hundreds, and in others none are to be found. They feed mostly upon the berries of the pepper tree, which are abundant in this city.

Progne subis, (Purple Martin). Migratory. Not very common.

Petrochelidon lunifrons, (Cliff Swallow). Very common summer resident. Breeds. Their nests can be found very plenty on the high cliffs along the coast.

Hirundo erythrogastra, (Barn Swallow). Rather common in summer. But I do not think they breed.

Tachycineta bicolor, (White-bellied Swallow). Migratory. I have no knowledge of its breeding near this city.

Tachycineta thalassina, (Violet-green Swallow). Common summer resident. Breeds in the hollows of the oak trees. The colors of this bird are the most striking in beauty of any swallows found in the United States.

Cotile riparia, (Bank Swallow). Migratory. Not so abundant as the next species.

Stelgidopteryx serripennis, (Rough-winged Swallow). Migratory. I have never found its nest.

Pyrranga ludoviciana, (Western Tanager). Migratory. I have only noticed this bird in the spring months.

Pyrranga aestiva cooperi, (Cooper's Tanager). Very rare visitor. Mr. Dodge, a friend, saw two specimens of the above bird last spring, and succeeded in shooting one.

Carpodacus purpureus californicus, (Californian Purple Finch). Winter resident; not very common.

Carpodacus frontalis rhodocolpus, (Crimson House Finch). This is one of the most abundant birds found in this locality, and the fruit-growers are often heard to complain of their destroying fruit.

Astragalinus tristis, (American Goldfinch). Resident. Rather common. Breeds quite plentiful.

Astragalinus psaltria, (Green-backed Goldfinch). A few are resident throughout the year; but the greater part of them pass northward in summer. A set of eggs of this species was brought to me from this place.

Astragalinus lawrencei, (Lawrence's Goldfinch). Spring and fall migrant. I am now quite positive that a few winter with us.

Passerculus sandwichensis alaudinus, (Western Savannah Sparrow). Winter resident.

Poocetes gramineus confinis, (Western Grass Finch). Migratory, not common.

Arremonodromus beldingi, (Belding's Sparrow). Rather common migrant. Breeds. I found one nest last season that contained five eggs, but unfortunately they were so nearly incubated that I only succeeded in saving two. One of these I sent to the National Museum, and I believe these to be the first known to science.

Chondestes grammacus strigata, (Western Lark Finch). Resident. Common in summer and very few in winter. Breeds.

Zonotrichia gambeli, (Gambel's White-crowned Sparrow). Winter resident; very common.

Spizella domestica arizona, (Western Chipping Sparrow). Rather common summer resident. Breeds.

Spizella breweri, (Brewer's Sparrow). Winter resident. Not common.

Junco oregonus, (Oregon Snowbird). An occasional winter resident. Last winter I saw none. This winter they can be found plenty in all parts of the city.

Melospiza fasciata heermanni, (Heerman's Song Sparrow). Summer resident. Breeds quite common in the canons.

Melospiza fasciata samuelis, (Californian Song Sparrow). Resident in summer. I think it breeds in the marshes, but have never found its nest.

Pipilo maculatus megalonyx, (Spurred Towhee). Resident. Breeds. This bird closely resembles the eastern Chewink in its habits.

Pipilo fuscus crissalis, (Californian Brown Towhee). This is one of the most common resident birds. Breeds.

Zamelodia melanocephala, (Black-headed Grosbeak). Common summer resident. Breeds.

Guiraca caerulea, (Blue Grosbeak). Rare spring migrant. I shot a pair of these beautiful birds last spring. These are all that I have found at this place.

Passerina amana, (Lazuli Bunting). Rather common summer resident. Breeds.

Spring Arrivals at Dartmouth, Mass.

The fine weather in March brought our migrants in good season. Up to date they are as follows:

March 7th, Red-winged Blackbird; 8th, Song Sparrow and Crow Blackbird; 11th, Cow Bunting; 13th, Fox Sparrow; 17th, Grass Finch and Purple Finch; 26th, White-bellied Swallow.

April 3d, Osprey.—H. F. Dexter.

OÖLOGY.

J. PARKER NORRIS, Editor.

The Editor assumes no responsibility for those articles which have the names of the writer attached.

Advance of the Science of Oology.

In turning over the pages of the *North American Oology*, (1857,) one cannot fail to notice the great advance that has been made in the science of Oölogy since Dr. Brewer published his book. Apart from the fact that many species have since been added to our fauna since that date, the eggs of many birds that were rare then, or wholly unknown, have since been found in comparatively great numbers. Dr. Brewer probably had as fine a cabinet in 1857 as was to be found in this country, for in those days the Smithsonian Institution had not gathered together much of its now famous collection. And yet Dr. Brewer was unable to figure the egg of the Golden Eagle, (*Aquila chrysaetus canadensis*), as he could not obtain one for that purpose. So also with the egg of the Swallow-tailed Kite, (*Elanoides forficatus*), which he could not obtain.

In those days also very little attention seems to have been given to collecting eggs in sets, with data. The object seems to have been to obtain as many eggs as possible, which exhibited some peculiarity, either in size or markings. While this is to a certain extent desirable, it did not make up for the loss of value and interest attaching to sets of eggs.

Of Dr. Brewer's mistakes in his *Oology*, such as his figuring the egg of *Buteo borealis* for that of *Astur atricapillus*; *Accipiter cooperi* for *Æsalon columbarius*; and *Petrocheilus lunifrons* for *Tachycineta thalassina*; it is not necessary to speak, as they have all been pointed out before; but a study of the work is instructive, as before stated, in showing the great advance made by Oölogy since 1857. What was a creditable work then would not be so considered in 1886.

The Number of Eggs Laid by the Red-tailed Hawk and the Great Horned Owl.

In the January number, 1886, of THE ORNITHOLOGIST AND OÖLOGIST, the present writer stated that the Red-tailed Hawk (*Buteo borealis*), more commonly lays two than three eggs, and doubted Audubon's "four or five." Mr. J. W. Preston, of Baxter, Iowa, however reports having found a

set of four eggs near that locality, on April 9th, 1885. One of them was so badly broken that it could not be preserved, and Mr. Preston suggests that possibly it may have been laid by another female, which was driven from the nest by a subsequent pair of birds who owned the other three eggs.

Mr. Preston further writes in answer to the statement in the same article, that it is doubtful if more than three eggs of the Great Horned Owl (*Bubo virginianus*), have ever been found in one nest, that he took four eggs of this bird from a nest on March 1st, 1881. They were laid in an old crow's nest. The present writer cannot think otherwise, however, than that two or three are the ordinary number; and that these were but the exceptions which prove the rule in both instances.

White Eggs of the Bluebird.

BY W. E. TREAT.

In the spring of 1883, a pair of Bluebirds took up their quarters in a neighbor's bird box, and by the 27th of April the female had deposited five eggs of the ordinary color. I removed three of these eggs, and in an interval of two days the same bird commenced laying again. I say the same bird for I am confident it was, as I had often made very close examinations of her. I watched the nest daily, and as I looked only at the eggs as they lay in the nest, which was in the box, and this darkened the eggs somewhat so that I could not distinguish their true color. One day I was informed by a friend that they were white, and I immediately removed the eggs, seven in number, including the two blue ones I had left there, and I found to my surprise that five of them were pure white, and were about the same size as the blue ones.

[The common Bluebird (*Sialia sialis*), is known occasionally to lay white eggs, but there has been much dispute as to whether this is a common variation in their color or not. The typical egg of this species is well known to be of a uniform light blue, and it is unusual to find eggs of varying shades of color in one nest. When white eggs are found they are all equally wanting in color in the set, and sometimes all the eggs in one nest have only the faintest tinge of blue; and they appear quite white until placed on some pure white surface, when the faint bluish tint is manifest. The absence of color is, of course, owing to want of the ordinary coloring matter, or pigment, in the parent bird, but is it a constitutional defect in the particular bird in question, or is it the result of laying a second or third set of eggs? The above instance cited by Mr. Treat, would seem to bear out the latter. No one has ever found white eggs of the Robin (*Merula migratoria*), although spotted ones have been sometimes found. Albino eggs are, as a rule, rare; but they seem to be commoner with the Bluebird than with any other species.—ED.]

Nest and Eggs of the Plumbeous Gnatcatcher.

BY HARRY G. PARKER, CHESTER, PA.

There are two conspicuous reasons why the eggs of the Arizona birds are sparingly found in collectors' cabinets, first, the scarcity of naturalists in that territory, and second, the terrible heat of the spring and summer months, which renders field work an arduous, if not a dangerous undertaking.

On March 26, 1885, my friend Dr. Chas. Carter, stationed in Pinal Co., Arizona, discovered a nest of the Plumbeous Gnatcatcher, (*Poliophtila plumbea*). This nest is in my collection, (he having kindly presented it to me) and I am thus enabled to describe it, as it now appears before me. Not being well versed in the plant life of Arizona, it will be impossible for me to describe by their proper names the materials of which it is made; suffice it to say that outwardly it is composed of very fine stalks of some delicate plant worked circularly, with these stalks is woven a soft downy substance, and here and there particles of dead wood are apparent, if examined through a glass. All this is kept in place with the silken thread of a spider's web, and the inside is warmly lined with raw cotton, in which are seen a few of the seeds. Altogether it is a neat and substantial little structure, though lacking the beauty of the lichen-stuccoed nests so characteristic of the Blue-gray Gnatcatcher, (*Poliophtila cerulea*), and the Hummingbirds. The depth of the nest outside is $1\frac{3}{4}$ inches; the depth inside $1\frac{1}{4}$ inches. The diameter of top outside is $2\frac{1}{2}$ inches; the diameter inside $1\frac{3}{4}$ inches; and the diameter of the bottom, outside, is $2\frac{3}{8}$ inches. The circumference of nest outside is $7\frac{1}{4}$ inches. It is compactly walled, and much contracted at the brim.

The nest was placed in the small limbs of a tree, forty feet from the ground, and when found contained four eggs, in which incubation was well advanced even at that early date (March 26th). The female refused to leave, and suffered herself to be taken by the hand, so the identification was perfect.

The eggs of this set average .58x.48, and are of a whitish ground color, with a bluish tinge, on which is a fine speckling of reddish, umber brown and lilac; this last color being indistinctly seen on three specimens, and entirely lacking on the fourth. In one egg only does this minute spotting form a blotch, and that appears on the largest end of the egg. In all the eggs the spotting tends towards the greater end, in the shape of a poorly defined wreath; though the entire surface of all

the eggs is covered with the little specks in more or less profusion. This bird is the rarest of North American *Poliophtila*, and is not abundant even in its assigned habitat—the valleys of the Gila and Colorado rivers.

Capt. Chas. E. Bendire, to whom I have shown this nest and eggs, told me that he only found three nests during his residence in Arizona; and the same gentleman in speaking of the comparative scarcity of this bird, said that the collector would find a dozen nests of the Yellow-headed Tit, (*Auriparus flaviceps*), to one of the Plumbeous Gnatcatcher.

Breeding of Franklin's Gull in Minnesota.

BY J. W. PRESTON, BAXTER, IOWA.

In western Minnesota there are many flat prairies, diversified by lakes, ponds and vast marshes, with only a fringe of stunted trees and bushes, or destitute of stick or shrub; a battle ground for wind and weather. Hither myriads of water fowl flock each spring to give animation and life to an otherwise dreary region. From early April until November's frosts, there is not a pond or creek or marsh on which the flapping of wings or cry of bird may not be heard day and night.

Geese, cranes and pelicans; cormorants and herons; rails, coots and grebes, with many species of ducks, make this their chosen summer home.

On one of these flats I spent a few weeks during the collecting season of 1885. Here I discovered a nesting place of Franklin's Gull, (*Larus franklini*) and became interested in its noisy, restless habits. The first that I saw were flying about over a piece of lowland in search of food. Several were taken, being males in the breeding plumage, the under parts beautifully rose-tinted.

Later they were seen following teams, eagerly darting down for earth worms upturned by the plows. No sooner did a fortunate bird secure its prize than a number of others began fighting for it. While thus intent upon their meal they would fly within a few feet of a man, regardless of his presence. At the report of a gun they moved off a distance, screaming loudly, when from all directions others came hurrying to find the cause of alarm.

After a number had been shot they became wary and difficult to approach. On warm sunny days small companies rose with scarcely a flap of wings, in easy spiral curves to a great height, and remained for hours soaring about on widespread, motionless wings, often so high as to appear no larger than robins.

In the descent their finest movements are displayed. All at once the wings are closed and down, down, comes the white troop for an immense distance, when the flight is arrested, the great impetus carrying them far in a horizontal course; so they rise and fall in pleasing curves at their own free pleasure, contrasting in a marked degree with their ordinary, flapping flight. At intervals they utter a shrill, clear cry, much resembling the call of the Marbled Godwit (*Limosa fedea*). While thus sailing, the black bars and white tips of the primaries are well shown. Almost any time during the day they can be seen, singly or in small companies, ranging over the flat country in search of their food; which consists of various bugs, worms, larvæ, and small fish, which are captured with great dexterity.

Their ordinary note is a loud, mewing cry; uttered in a short, jerky, impatient manner, somewhat resembling the mewing of a cat. This call is constantly kept up, and when they congregate at their rookery in the evening, the din is deafening, and may be heard all night during the mating season; which begins about May 1st and lasts until the fifteenth of the month. Regularly at dark a large portion of the flock took their noisy way to the open lake, where they remained on the water until light.

On the morning of May 9th, I threw my canvas boat into a tortuous channel which led far into the centre of the marsh which covers a tract of several thousand acres, and is broken here and there by shallow ponds and arms of open water, but is principally a tangled mass of coarse sedge and cane; which, having fallen year after year until the high, deep water is filled and covered with slimy filth, is a hotbed of malaria. Through this I rowed the boat when possible, and pushed it ahead where the growth was most dense.

At length I came to an open current sufficiently strong to carry me into the odd village of these birds. A few sentinels had followed me for some distance, and by the time the border of the rookery was reached, an immense cloud of Franklin's Gulls arose and moved back and forth over their nesting place; screaming wildly as they darted about, trying to drive me away. Soon the flock flew out of range and moved in a body overhead. With the sun shining on their silvery forms as they marshalled their wavering bands, I thought that never had I seen a sight more beautiful, and certainly there were no fewer than ten thousand of them.

No eggs were found, so I departed to return one week later, which I did; and to my dismay the wonderful flock had flown away for their northern breeding grounds. A few pairs re-

mained, however, to perform the duties of nidification.

While defending their nests they evince great courage and spirit, successfully routing the Canada Goose (*Bernicla canadensis*), White Pelican, (*Pelicanus erythrorhynchus*) and other large birds which chanced to molest them. A most distressing sight was the determined, but unsuccessful, attempt of a dozen frightened gulls to chase a large snapping turtle from a nest on which it had killed the mother bird and was leisurely devouring her eggs. When I approached a nest the owners, with a few others, hovered about crying piteously, almost striking me with their wings.

The nests were similar in construction, being old water-soaked sedge stalks, carelessly thrown into a bulky heap on top of bent stalks of last season's growth; thus being in no danger of sinking into the water, and light enough to float should it be necessary.

In the top of this mass is formed a cavity one or two inches deep, by six or eight inches across; neatly lined with soft blades of grass, the outside diameter being about eighteen inches. The nests were clustered at the edges of small open places in the sedge; the water everywhere being about two and one-half feet deep.

The number of eggs in each nest varied from one to three; but more contained three than two. Undoubtedly the sets were complete, as incubation had begun, though eggs may have been removed from nests by the numerous snakes and turtles that infest the swamp.

The shape of the eggs was as usual for gulls, with variations from narrow elongate to pointed, and short pyriform. The ground color varies from dark chocolate, sooty, creamy-brown and dirty white, through all the shades of light-green and light-drab; variously marked withumber of greater or less intensity; usually with bold blotches largest at the larger end where they are wreathed. In some examples the spots are small, and evenly disposed over the surface; others being scratched and streaked with irregular, zigzag lines of dark brown; and all have obsolete, lilac shell-markings, similar to those on the surface. From several sets I give the following measurements in inches: One set of three, measures 1.94x1.42, 1.94x1.45, 1.94x1.46. Another 2.19x1.41, 2.06x1.46, 2.15x1.47. A set of two measures 1.91x1.38, 1.84x1.33. Out of thirty eggs the extremes are: 1.84x1.33, 2.14x1.50, 2.25x1.47; average 2.04x1.38, but more were 2.05x1.45 than any one measurement; showing great diversity in pattern, of coloration and size and shape.

Why this strange freak of extreme southern breeding, I am at a loss to account for.

THE ORNITHOLOGIST —AND— OÖLOGIST.

A MONTHLY MAGAZINE OF

NATURAL HISTORY,

ESPECIALLY DEVOTED TO THE STUDY OF

BIRDS,

THEIR NESTS AND EGGS.

DESIGNED AS A MEANS FOR THE INTERCHANGE OF NOTES
AND OBSERVATIONS ON BIRD AND INSECT LIFE.

FREDERIC H. CARPENTER, Editor,

REHOBOTH, MASS.,

FRANK B. WEBSTER, Publisher,

409 WASHINGTON, ST., BOSTON, MASS.

Editorial.

An extra edition of this number will be issued gratuitously, and any party receiving duplicates will confer a favor by handing it to some one interested in the topics of which it treats. We shall send it to friends whose subscriptions have expired, and hope to hear from them.

Massachusetts Society of Taxidermists and Naturalists.

This association—C. I. Goodale, Boston, President—whose object is to look after the interests of the Massachusetts fraternity, and whose membership is extended over the State, has been quickened into activity of late. They were well represented at the State House, at the late hearing upon the game question. At the last meeting it was voted to adopt the ORNITHOLOGIST and OÖLOGIST as their organ. We feel perfectly safe in endorsing these gentlemen, and hope to see similar organizations throughout the country. It is time taxidermists and naturalists came to the front. Their advice on the protection of game and song birds would be based upon *experience*, and would have

full as much weight as that from other sources. They should have the hearty support of all who are interested in the State actions on the question.

“Bird Protection.”

The protection of our birds is at present a much agitated subject, and in the previous number we inserted the circular of the committee who have taken the matter in hand. We heartily sympathize with their endeavors and will second any efforts to secure a *uniform* protection for our birds; but in view of certain proceedings, we think it proper to express a few differential opinions.

The destruction for millinery purposes is the greatest cause for the decimation of our birds, and we consider *this* the hydra-headed monster which the modern Hercules would do well to demolish. To still further forward their object the committee have advocated discrimination in granting permits to collect to the amateur scientist. Such efforts are laudable; but we notice a tendency among the associated scientists to arrange themselves in opposition against the amateur and taxidermist. This antagonism when viewed in certain lights appears amusing, but again as favoritism and influence may result in harmful legislation, it presents a more serious aspect. Leaving aside all sentiment which has no bearing whatever on the question, we are of the opinion that the taxidermist is no more destructive than the scientist, and from statistics gathered within the past month, we present the following statement.

Eight prominent scientists give us the total sum of their work, averaging sixteen years, 48,340 bird skins, (about 6000 apiece)

Ten taxidermists of large business experience, have sent us the record of the birds handled by them, and as the result of an average of fourteen years, they show only 37,480 birds, (3,748 birds apiece.) We leave for the consideration of an intelli-

gent public the decision as to which party is to be held responsible for the destruction of our birds.

The principal argument against the taxidermist, preferred by the scientist, is that the former *sells* the birds he collects. We fail to see what connection this has with the subject of *protection*. If a man collects and sells a hundred birds why is he any worse than his neighbor who slays an equal number, and keeps them in his cabinet?

The amateur student of bird-life has come under the ban of displeasure. To collect under the false pretense of science is to be deprecated, but we would like to ask what in the opinion of the committee constitutes a "pseudo-scientist." When the love of nature draws one forth in pursuit of a congenial and profitable study of our birds, we are of the opinion that it should be as allowable by law as any exploration recorded in our scientific journals. We have had the privilege of examining many collections of these unknown workers in ornithology, and in arrangement and records they will compare most favorably with those of the *scientist*.

We do not wish to be understood as opposed to the workings of the committee, on the contrary we are in accordance with their views in the main, but there are other interests beside those represented by the American Ornithologist's Union, and the ORNITHOLOGIST and OOLOGIST, representing the greater portion of working naturalists, we felt constrained to speak in their behalf, and from the tenure of letters received from many of that class, we know they do not conflict with the desires of the Union, but when the glaring truth is visible—that many are to be debarred that a few may have the greater privilege—then we considered it our duty to present a few facts for consideration, and to make good our promise to "meet the issues of the day without fear or favor."

Practical Taxidermy.

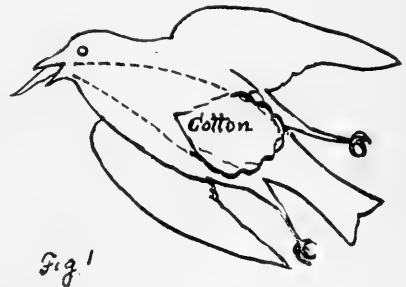
BY FRANK B. WEBSTER.

CHAPTER VIII.—MAKING SKINS.

During the collecting season, which is of short duration, and when on collecting trips it is not always practical to stuff specimens, both on account of the time required and convenience in transportation. In addition, many who can stuff birds, will buy skins when they would not stuffed specimens, preferring to have a hand in the finishing.

It does not require the same talent to make a good skin that it does to stuff one. Many of our best collectors make skins that are much sought after, who could barely stuff a bird that would be passable, and some expert taxidermists fail in making fair skins. Every sportsman should acquire the art and we would be spared from the every day expression, "I would give anything if I could have saved such a bird, I shot on last trip."

Taking the specimen, if a bird, follow the directions as given in chapter iv, till it is ready to stuff. Draw the leg bones out till exposed, wind them with cotton, and by taking the feet pull them back into place. With stuffers fill the skull with cotton, taking a piece of cotton about the length of the bird. (This is for birds from the size of pigeons to the smallest.) Twist one end small and with the stuffers pass the small end into the skin through the neck, out of the beak,



by drawing on the end that protrudes, the neck can be shortened as desired. Next fill the body with more cotton if necessary and sew up the opening. The skin can now be dried in three ways. First, fix a paper cylinder. Take a sheet of stiff paper and roll it into a cylinder, fasten it with two pins. The diameter of the cylinder should be the same as that of the bird before skinning. The filled skin will be larger. Drop it into the cylinder head first, pass it through two or three times to shake it; then put it in till the beak protrudes at the opening; arrange it with

it forceps. See that the wings are even, head and feet are in place. In arranging head, for scientific purpose, it is preferred to have the bill on a line with the back, for mounting, the bill at an angle. If the bird has a crest, some turn the head on one side. The skin in the cylinder will appear thus:



Let it remain twenty-four hours; take it out, arrange any feathers that may be out of place, and once more replace it and let it remain until dry. The second way is by the use of a tin form—a half cylinder—fastened to a block. A series of these tins should be made, varying in size. For a Bluebird, cut the tin say $2\frac{1}{2} \times 5$ inches; bend it in a semi-circle lengthwise and fasten it with a tack to a small block; arrange the skin in it, on its back. This has the advantage over the first way, that you can better see the skin to arrange it. When in use it will appear thus:



The third way is to wrap the skin in thin sheets of cotton. This latter is claimed to be the best when off on collecting trips. The skin is finally shaped after being wrapped.

VARIATIONS.

Some, instead of passing the cotton out of the beak, wrap it on a small stick. For small birds use a toothpick. Then force the point up into the skull. They claim the skull is less liable to break at the neck. In the method I have given, I depend on the wings being tied and then by arranging them to dry in shape. Others secure the wings by taking a stitch in them through the side of the skin, which holds them in place.

If tin forms are not on hand a substitute may be made by taking a board, nailing cleats and tacking paper to them—the spaces between the cleats being the forms.

For ducks and large birds, make an excelsior body; use a very light head wire; wind the wire with cotton, (not too much) and pass the wire up through the neck and skull. Bend the head back on the body, turning the head on one side; the wings may be pinned in position with small

wires, and the body wound down. A band of paper around the body is sufficient.



In closing this chapter, let me advise that you make every skin with the same care that you would take if you expected to stuff it yourself. A well made skin is as much a study of admiration as one that is stuffed. The tendency I think is now increasing to make collections of skins rather than stuffed specimens. Poorly made skins are trash and can only be disposed of for millinery use.

Label each specimen, giving sex, date of capture and locality. This is indispensable if the skin is to be of scientific value.

SKINS PROPERLY SHAPED.

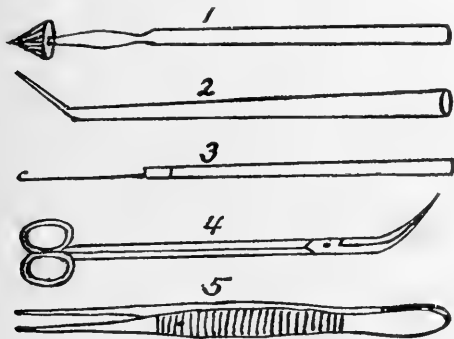
[As the determination of sex is a very important factor in the study of birds, we here quote the rule for finding the sexual organs, as our correspondent has not done so in the previous chapters. "The sex is found by cutting through the lower ribs on one side of the body and pushing back the intestines. The testes of the male lie in the cavity of the spine, where the ribs commence. They are two in number and of a whitish color, though in some birds of a dark blue. The ovaries of the female are a small mass of fine globular structures. They are in the same position as the testes of the male. In the breeding season both sexes are easily determined, but at other times a small lens should be used for accuracy."—Ed.]



CHAPTER IX.—PREPARING BIRDS' EGGS.

Lack of space in the present number of the O. and O., and the fact that with its issue the egg collecting season opens, renders it advisable that I confine this article to a condensed rule for preserving. The necessary tools consist of: Drill—From the smallest to those suitable for large eggs with embryo, fig. 1. Blower—It should be either nickel plated or German silver—never brass—curved, and with a small end, fig. 2. Embryo

hook—A fine steel wire bent into a hook, to use in removing an embryo or chick when found, fig. 3. Embryo scissors—Very fine, for cutting the chick in order to remove it in parts, fig. 4. Fine forceps—To use in removing the embryo, fig. 5.



I give the following from memorandum handed to me by Mr. M. Abbott Frazer: Take the egg and holding it firmly with the left hand, starting a hole with a pin or needle. With the drill make a clean round hole in the center of one side. If the egg is fresh the hole should be from 1-16 of an inch in the egg of the Warbler to 3-16 of an inch in that of a Duck. In using the drill, work on the reverse; this will drill and not cut. If you work with the teeth in cutting it is liable to break a delicate shell. In the larger eggs pass the burr into the egg and in drawing it out it will cut out a round hole in the thick skin. If this is not done and the skin only split it closes up and it is almost impossible to blow the egg. In blowing, hold the egg hole down and the small point of the blower just at the hole; as you force the air in the contents run out through the small hole. If the embryo is just forming, make the hole a trifle larger. Insert the blow-pipe, holding the point close to the side of the shell. By blowing it will force the embryo to the hole and it can be drawn out with the hook. If the chick is well advanced the large drill must be used, and with the fine scissors it can be cut and with forceps or hook taken out in pieces. After blowing, the egg should be thoroughly rinsed inside with water, which can be done by forcing water in with the blow pipe. It should then be placed hole down on a blotter to dry. This should be carefully done. See that none of the contents is left, as it endangers the specimen in three ways: discoloration, rotting and attracting insects. Each egg should be marked with lead pencil near the hole, in the form of a fraction, the numerator being the number of eggs in the set, and the denominator the set number—usually the set number corresponding with some system of

nomenclature, which is an identification of the egg. When the collection is large all three are used. It is often of ~~service~~ use, if the egg is one on which it can be done, to mark the date on one of a set. In collecting it is important to make a record of the date, locality, and full particulars.

Mexican Crossbills in Kansas.

BY D. E. LANTZ.

Mexican Crossbills, (*Loxia curvirostra mexicana*), have recently been taken at several points in Kansas. As they are new to the State, the fact is worthy of notice.

On July 6, 1885, a party of scientists from the State Agricultural College, were collecting near Wallace, in Western Kansas, and shot a Crossbill which was skinned, but, through carelessness in packing, the skin was afterwards ruined and thrown away. This specimen was not identified, but the fact that the Common Crossbill has never been found in this State in summer and the further fact that this was found near the known summer range of the Mexican Crossbill lead me to conclude that this must have been the southwestern form.

About Nov. 12th, Prof. Dyche of the State University at Lawrence, shot several specimens from a small flock of Crossbills. Upon examination they proved to be of the form *Mexicana*, the first positively known to be taken in the State and perhaps the most eastern record.

On Nov. 22d, I had the good fortune to secure three specimens from a flock of twelve at Manhattan. I had seen them several times during the preceding week, always feeding upon wild sunflower seeds. On January 6th, I again shot two male specimens from a flock of about twenty. This flock were nearly all males.

In the latter part of December Mr. V. L. Kellogg, of Emporia, captured a pair of this variety at that place. These several captures of a new bird at different points would seem to show that it has been rather common this season.

Food of Crows in Winter.

Before me lie the contents of the crop of a Common Crow, (*Corvus americanus*), shot while the ground was yet frozen as he returned from feeding grounds down the river to a rookery (?) some two miles above here. The product is largely vegetable showing husks of grains of Indiana corn. Evidences of dainty piscatorial food are found in small amphicælus vertebrae. Evidences of other vertebrate food are found in bones. I am not yet able to classify a fragment of a small humerus or femur. Are the records of the winter food of this bird sufficient to make him a living bill of fare?—*Theo. G. Lemmon, Westport, Mo.*

ENTOMOLOGY.

WRIGHT & BATES,

73 Hanover St., Boston, Mass.,

ASSOCIATE EDITORS.

Address all communications for this department as above.

Editorial Notes.

We are pleased to learn that Prof. C. H. Fern-aid, of the Maine State College, has now in press a work on the "Sphingidae of New England." Such a book has long been needed and will be hailed with delight by those who have hitherto experienced so much difficulty in determining their specimens. He has the largest known collection of the *Tortricidae* of the world, and of the *Pyralidae*, *Tineina* and *Pterophoridae* of North America. His name will be a sufficient guarantee as to the merit of his work, and we hope it will meet with the success it deserves.

Practical Entomology.

BY WRIGHT AND BATES, 73 HANOVER ST., BOSTON.

(Continued from page 45.)

HEMIPTERA.

PECULIARITIES: Wing structure various. With some members of this sub-order the wings are entirely wanting, some have the anteriors more or less modified into corneous coverings, while some have membranous wings.

On account of these differences, there have been formed two sub-divisions, *Hemiptera-Homoptera* having four membranous wings, and the *Hemiptera-Heteroptera* having the other various modifications.

The mouth parts are formed for sucking and piercing, and are without jaws. Transformations incomplete. Larva and pupa like the imago, but without wings and smaller.

LOCALITIES. The *Aphide* and the *Coccide* (plant and bark lice,) infest the leaves and bark of plants, where they often do much damage.

The *Notonectidae*, (water-boatmen) the *Platycoræ*, (water bugs) and the *Nepidae*, with some of the *Reduviidae* are aquatic and are to be found only in and about water and wet places.

The *Membranacci* (bed bugs) are too well known to require comment.

The *Pediculina* (lice) and the *Mallophaga* (bird lice) are parasitic, and are found on various members of the animal kingdom.

The *Cicadaria* (cicadas) emerge from the ground in the summer and may be taken on the trunks and in the foliage of trees.

The *Cicadellina* (leaf hoppers) and the *Coreisæ* (chinch-bugs) are very abundant in warm weather on the flowers and foliage.

The members of this order are found, with very few exceptions, only in warm weather, when they can be taken, often in large numbers, by sweeping the fields and the foliage of trees, but will sometimes be taken under the bark in winter.

The aquatic varieties are secured by dragging the ponds and rivers, and by sifting the mud taken from the pools and ditches.

Sphingidae of New England.

V. S. MYOPS.—*Sm. and Abb.*

Palpi, brown edged with dull yellow; head and thorax chocolate brown, with a roseate tinge, the latter with a dull yellow dorsal stripe. Abdomen brown, spotted with dull yellow, posterior edges of segments darker brown. Anterior wings chocolate-brown, irregularly tinged with rosy, especially toward the base, where there is a small black spot. A faint rosy-brown line crosses the base of disc, followed by a chocolate-brown patch, broadest and darkest anteriorly, inclined toward the anal angle and joined by a line or patch of the same color extending to the inner margin toward the base. Hind margin brown, preceded by a band and two or three undulating lines of the same hue, fainter toward the anal angle and separated by lighter lines, tinged with rosy. An apical V-shaped, rosy-bluish line, with apex toward the base and preceded by a dull yellow spot; a dull yellow spot surmounted by one or two black spots above the anal angle. Posterior wings dull yellow, with a broad brown patch extending from near the middle to the costal and outer margins, a yellow spot on tip, and above it two short rosy-blue lines which disappeared at the edge of the yellow central patch, but show more faintly after crossing the ocellus. Ocellus black, with large pale-blue pupil.

Under side chocolate-brown; anterior wings, with markings similar to upper side, with the exception of a brownish-yellow patch, extending from near the outer end of disc to the base, costal margin light brown. Posterior wings more mottled with brown than on upper side, and the bluish lines are continued across the ocellus. Mature larvæ. Head and body bluish green, with a row of sub-dorsal and stigmatal reddish-brown spots. Six oblique lateral bright yellow bands, with two thoracic, sub-dorsal, yellowish lines. Yellow lines on sides of head and horn. Pupa dark brown, smooth, cylindrico-conical and acute. Transformation subterranean.

Food plants: Leaves of the wild cherry.

A Deformed Prionus.

Cyanide's article in the March O. and O., on a deformed *Catogenus rufous*, reminds me of a remarkable specimen of *Prionus laticollis*, which I found near Stamford, Conn., in 1879.

One side of this beetle showed a strange malformation, the elytron being one-third smaller than the other, with its edge rolled up so the under wing could be seen. This elytron was of a light brown color, as were the legs on this side, while the tarsi were short with claws only partly formed; the thorax was perfect, and the only deformity to be seen about the head was the right antenna, which was of a lighter color than usual and quite short, the points being the same in number but not so long as they should be.

This insect was sent to Dr. LeConte, and he wrote that it was a very curious deformity, but said that he had seen one or two that closely resembled it. I have found other species of Coleoptera, one a male *Lucanus damiao* with an abbreviated elytron; but I have never seen a specimen that showed so clearly a pupal injury, for I can account for this deformity in no other way, except that while in its pupal state it was injured in some way just enough to retard its growth on one side, while the other completed its transformation and became perfect, not only in size and shape, but also in color.

L. E. H.

Start a Collection.

Now that spring is at hand and insects are becoming active, I should advise all to start a collection. With the instructions contained in the article "Practical Entomology," (in this department,) a little patience and practice, you will be surprised at the large number of species of the different orders that you will secure before the year is out. There is no study more fascinating and the love for the science grows upon you slowly but surely, as you become accustomed to handling your specimens and discover the wonderful beauty of many of them, especially when examined under a magnifying glass. Of course, there are some little drawbacks to the enjoyment, but only sufficient to give it a keener relish. But it is not alone on account of the pleasure you would receive from it that I say "start a collection," but also the great benefits to be derived mentally, morally and physically. It improves the memory, sharpens the eyesight (and the appetite) and gives the needed exercise in its most beneficial form. If your habits are sedentary, a walk without an object, simply taken as a duty, is practically useless. Have your mind pleasant-

ly occupied with something outside of your regular business and you will be surprised at the distance you can travel without feeling fatigued, and a day's travel in the woods and meadows will fill your lungs with a supply of fresh air that will last you until your next trip.

It is surprising to see how little the farmers and gardeners, as a rule, know about the habits, food, etc., of these little tenants of their homesteads. How few of them seem to know their friends from their foes, and consequently kill all alike. I have seen a man destroying the Coccinellidae (lady bugs), because, as he said, they were killing his peach trees. Truly, the leaves were all shrunk and dried up, but you can imagine his surprise when I showed him that the trees were infested with plant lice, which were causing the damage, and the lady-bugs had gathered from near and far to feast on them. Many insects feed on others, and such may be considered friends. A little pleasant study will enable any one to distinguish between them, and a fine collection will be his reward.

To parents I would say encourage your children to take up this study, for they could not find a more harmless and instructive amusement.

J. A. W.

The Tarantula or Trap Door Spider.

This is the largest of our American spiders. The male is large, strong, long-legged and completely covered with coarse brown hair. The palpi are unusually well developed and armed with poisonous fangs. Each of the anterior legs has a projection on the under side with which to hold off an enemy while the fangs are at work inserting the poison. He lives in a hole (in the ground), with a silken lining and open at the top, with the exception of a web during the day. A deserted mole or gopher hole seems to answer his purpose as well as anything. About sundown he removes his web and rests in the hole with the tarsi of the anterior legs just above the surface, ready to rush out on some unsuspecting grasshopper or other prey. At this time he is easily taken. I have pulled them out with my fingers, by seizing the toes quickly, and dropping them before they had time to use their fangs. But as this is rather a dangerous operation I would not recommend it. My usual method was to take a lath, cyanide bottle, and a stalk of timothy hay. As soon as I found a victim I would carefully approach him from the side on which he was resting, reach the timothy head just beyond him and draw it quickly back. He would immediately dart after it and before he discovered his mistake

I would cover the entrance to his house with my lath. He was then at my mercy and I had only to place him in my bottle to number him with the slain. In this way I have taken twenty-five nice specimens in less than an hour. A little water poured into the hole will usually drive him out, but that is not always convenient.

The ♀ is much smaller, more slender and of a beautiful piceous black. She is rarely seen except when forced from her house, and will generally prefer drowning to forsaking her offspring. This house, in which she rears her young, is a wonderful piece of architecture. It is a cemented earthen tube, running down in the ground from five to ten inches, thence horizontally two to three inches and furnished at the surface or top with a perfect D-shaped lid, securely hinged on the flat side and perfectly water tight. The whole inside of the house is lined with a beautiful white silken web and in the lining of the lid, there are two holes, in which she inserts her fangs to hold it shut in case of danger. It requires a practised eye to discover these houses. I have seen twenty men hunt a whole day (without finding one) over ground where I could average one an hour. The males are cannibals and very pugnacious. It was a common amusement amongst the men in some places, to pit two against each other and let them fight it out. One evening I counted eighty-three pairs laying dead on the platform at the railroad station in Merced, Cal., where they had fought to the death. The largest specimen I ever took, I dug out of a gopher hole, and behind him he had the remains of hundreds of his species that he had eaten. I placed him in a case and put a ♀ with her house in with him, making their condition as natural as possible under the circumstances. The first time she stepped out he pounced on her and ate her with a seeming relish. I tried repeatedly to keep a pair of them together, but it was useless, as he killed and ate all that were put in, regardless of sex. I finally sent him to Woodward's Gardens, then a popular resort in San Francisco.

CYANIDE.

Notes on Spring Collecting.

BY L. E. H.

Spring is upon us; already insect hunters are in activity and many enthusiastic collectors have wandered over their favorite grounds in search for the beetles found only at this season.

As a matter of tradition all turn over stones, and as many rare species can be found, this is well. But why not replace the stone in its orig-

inal position when you are through? It takes but a moment, and if it is a good locality you will be well repaid for your trouble. By being careful in this respect you can preserve your ground the entire season and will reap more than one harvest.

Why so few do this it is hard to say, but it is certainly a good plan to follow.

When the sun becomes quite warm, with a cool morning and evening, take a few pieces of old tin, say a foot or two square, and lay on the ground where the sun will warm them thoroughly in the middle of the day; go once in a while and turn them over carefully and look on the under side for beetles. Never look on the ground first. Most of the insects you will secure by this method crawl out of the dead grass and cling to the tin for the warmth it affords; thin boards can also be used but are not as good, and I have used corn stalks with success, especially late in the autumn.

Do not devote your time entirely to dead trees and stumps, though prolific in insect life. Use your hatchet on live forest trees; cut off the bark close to the ground, and work slowly or you will destroy many very rare species. Nearly every species of tree has its peculiar insects, and patient labor will not be lost.

Keep your eyes open for early water beetles and rare Staphylinidae. Many species of the latter can be secured, some under nearly every stone and stick, in old stumps, under bark, indeed everywhere, and next to spiders will be the chief torment of spring collecting.

As soon as trees are in blossom you should be doubly active. Good species of weevils and early longicornes are to be found. Your net will not be of much service now, unless it is your sweep net on low trees and shrubs. On the highest trees use an inverted umbrella; hold it up under a tree and hit the limbs with a rod or heavy cane. Shake the material you thus catch, bugs, dirt and all, into a large-mouthed bottle charged with cyanide, and continue your work from tree to tree. When you get home you can sort out your beetles and throw all that is useless away.

With many trees, newspapers, or better still, a large sheet can be used to better advantage than the umbrella. Spread the sheet upon the ground and shake the tree well, gather up all that falls and dispose of as with the umbrella.

Of course, many will fly away, and it is always best for two to engage in this work—one to shake the tree and the other gather in the too lively insects. This kind of collecting is very profitable.

As the season advances many ways can be thought of to trap beetles. All know of sugaring, and the lamp or candle trap for butterflies

and moths; but few have tried to trap Coleoptera. All the scavengers, the stag, and many Lamellicornes, weevils, and in fact, nearly every family of this order can be trapped; but it pays only in certain cases.

It is easy to trap the scavengers, for the body of a dead rat, bird or snake, will bring you species, and if you desire to rear the larvæ your trap will be of great value. Some years ago I wished to observe the changes of the Necrophorus and with the aid of an old tin pail which I buried until the top was on a level with the ground, filled with earth and baited with a dead rat, I secured enough material for a very interesting series of observations.

CORRESPONDENCE.

War Against Taxidermists.

Editor ORNITHOLOGIST AND OÖLOGIST—Sir: A special crusade seems to have been inaugurated against taxidermists, under the auspices of that wonderful, high toned menagerie known as the Massachusetts Fish and Game Protective (?) Association, at their late annual love feast at the Parker House. During the session, (at which none who bait the hook with a worm or use a gun that kills at less than seventy-five yards were invited), the ball was set in motion by a speech "which we presume the committee considered would just be worth the expense of one plate." What a scene! What must it have been to be there! Imagine the high glee with which the encore was given. How the rotund form of the president shook under the joke, (as have many a taxidermist while reading his wonderful "Birds of New England"), but enough, no doubt as they parted they passed a mutual congratulation that they had at last struck a case that they "thought they" had backbone enough to prosecute.

The scene changes, we enter the State House; as we pause to gaze at the mementos of Massachusetts' great men of the past we feel our veins fill, and a thrill of admiration prevail. Alas how short is its duration. We pass to a committee room to attend a special hearing before a committee of the legislature. The room is over-crowded, all interested upon the subject of game, including taxidermists, are present. The society of "P. of C. to A.," who want their code vaccinated into the youth at the public school, the representative of the farmers' boy who wants to snare Grouse, the club sportsman who wants to fix the whole business to suit himself, and the game dealers who wish to sell game during part of the close season. The meeting now opens, which is also the signal for the opening of the flood gates. Volley after volley is spouted in rapid succession at the taxidermist and naturalist. By common consent they seem chosen the scape goat. Mr. W. W. Castle defended the taxidermists from purely an act of justice, and was at once pounced upon in a manner that reminds us of the antics of a drove of Mexican Peccaries.

One Lathrop, of Springfield, fairly danced as he flatly stated that he was present to declare war on taxidermists. In his rambling tirade, which it would be a waste of space to repeat, he made the following remarkable statements: "That the science of ornithology had reached perfection years ago in this section, and that there was nothing new to learn." Ye Gods! Laugh not at this, rather pity. "That he knew a taxidermist who would pay two dollars for every skin of the

Scarlet Tanager he could get, and that Orioles were worth more." Will any one who reads this, with the fact that Tanager skins have been listed at 60 to 75 cents and Orioles at 30 to 50 cents by dealers for the last five years, take stock? Not much. We want to know who that taxidermist is. This valiant knight closed his harangue by accusing taxidermists of trapping Bobolinks. Great Heavens! Does he take us for "figure four traps?"

In his excitement he said that he would give two dollars for the skin of a taxidermist. This, we are informed, he claimed to be a "slip of the tongue"—better call it all a land slide. We will venture to say to this mighty warrior that more birds were sold to his constituents at Springfield during the past season by milliners than were taken by all the regular taxidermists in the State. He make war on the taxidermists! The laugh at his lingo will exceed by far his Apache war whoop. Let the Massachusetts naturalists use their opera glasses and study this exterminator. Perhaps they can trace its origin back to the good old days of witchcraft, (he did not suggest burning Taxidermists). A gentleman present stated that he had not seen birds in his back yard for some time, and thought they had all been killed. Who did it? Of course the taxidermists. The hats of the lady reporters present did not seem to suggest that at least taxidermists were not consumers.

Mr. Shumway, of Plymouth, stated that the taxidermists, interest was so small (capital vs. labor) that it was not worth the committee's while to bother with them. Indeed! We think the Knights of Labor will meet him some day if he sticks to that text. With gentle mein and down cast eye "a lady present said, that last winter the preference of the millinery fashion had been for Massachusetts birds," and immediately said lady devoted the rest of her attention to reporting her neat little speech, to the exclusion of what was said in defense of taxidermists. (See Boston papers March 2d.)

As we passed out we paused once more before the marble figures of the great and just, to see if they had not turned away their faces. Now, what does this mean? Why assail the taxidermists and naturalists, you who declare war.

Visit the taxidermist, examine his stock, and then call on any one of the great millinery houses, that out-number by far the taxidermists, and you may be able to discriminate. Is it the taxidermist that created the fashion of hat decorations with birds and feathers? Is it the taxidermist that compels your wives and daughters to wear them? Are you too henpecked to say "boo" about it at home, and think it easier to fight the taxidermist than object to the Paris fashion?

We divide you who cry down the naturalist and taxidermist into two classes, the ignorant and the malicious. To the former we are ready to define our position, to the latter we defy you, and are ready to meet you as you appoint. As naturalists and taxidermists, we do not favor, nor are we in sympathy with the millinery trade, or wanton destruction of bird life. We are ready to assist in protection—and protest against false charges, and insist upon an open season, with proper limitation, with as much ground as the sportsman.

The second hearing before the committee was more pleasing to taxidermists—other targets being used—from its chaos our reporter returned the following—it makes us smile—resolutions and suggestions offered to the committee on fish and game at the Hub:

SCENE 1st.—Game Dealer—"There are no Deer or Pinnated Grouse in Massachusetts."

F. and G. "p." A.—"Bucks may be shot, Does not."

Rev. E. B., (critic)—"Sex must be plainly marked; in quick sight shots, mistakes might occur."

Taxidermists (advice)—Refer this to "new" Inland Fish Commissioner Lathrop.

SCENE 2d.—*Game Dealers*—"We can distinguish Connecticut Quail from Massachusetts Quail."

F. and G. "p." A.—We drew it up. We don't want it. We present this. We accept any change. What do we want? What don't we want?

Taxidermists—Refer this to "new" I. F. C. Lathrop.

SCENE 3d.—*Expert Citizen from Oyster Bay locality*—"Have hunted for twenty-five years; never saw but one Deer."

Lawyer Tindale, who owns a summer resort at Oyster Bay and will not be questioned—"People from all over the country come down to my place just to see Deer in their natural haunts."

Taxidermists—Do they wait twenty-five years? (Refer this to "new" I. F. C. Lathrop.)

SCENE 4th.—*Excited Game Dealer*—We ask for this. We want it. We will have it anyway. (?)

Cool Game Dealer—Massachusetts people demand that we should sell game after the close season. (Presumably members of F. and G. "p." A. on the sly).

I. F. C. Lathrop (trembling voice)—Protect the Buffalo. (General laughter.)

Taxidermists—Is he a song bird? Are the taxidermists after him?

In closing we present an editorial squib from the *Boston Herald*, to show the bluster. This we believe to have been written in the interests of Boston game dealers, who were vexed because taxidermists insisted before the committee that no game dealer should be allowed to sell or have game in possession during close season.

"There is an awful lot of humbug about this 'natural history study.' Why should the robbing a birds' nests be encouraged on the simple statement that it is done for scientific purposes? What are scientific purposes? Of what use to science is a collection of a dozen or two of birds' eggs made at the cost of half a hundred times as many ruined nests. Ornithological is an impressive word, but the ornithological science which is killing off all our birds, beautiful for song or plumage, and which yield not a namable benefit, is a delusion and a snare."

The reader can see evidence of the incapacity of which the *Boston Globe* has so often reminded us of late.

MASSACHUSETTS TAXIDERMIST.

RECENT PUBLICATIONS.

Capen's "Oology of New England."

This valuable and handsome folio volume has at length been published. It has long been in preparation, and its appearance has long been anxiously awaited by many, whose patience has been amply rewarded. Since the publication of Dr. Brewer's *North American Oölogy*, no work having such an ambitious scope has been attempted. Dr. Brewer's book, it will be remembered, was only fragmentary, as it contained merely the *Raptorial*, the *Hirundinidae*, and a few others, which were embraced in Part I of that work. No further Parts were issued, and the book to this day is incomplete.

Mr. Capen's work, as its title indicates, is an account of the eggs, nests and breeding habits of those species of birds known to raise their young in New England. It is surprising, however, how large the list of species included is, and it therefore is in fact, what it is to be hoped it will eventually prove to be, the first portion of a work which will finally include all the species of North American birds whose eggs have been discovered.

A book on oölogy without illustrations would be of comparatively little value, and Mr. Capen has wisely made them one of the principal features of the work. Twenty-five large plates, each ten by fourteen inches, afford ample room for hundreds of figures of eggs. These are well drawn and

beautifully colored. They are produced by chromo-lithography, but have all the delicacy they would have if colored by hand, besides being more uniform than if produced in that way; and they have, moreover, the advantage of enabling the book to be published at a price which is surprisingly low, considering the number and great beauty of the plates.

The eggs are all figured the size of nature, and in a great many instances, several illustrations are given of each species. Thus in Plate I there are two figures of the eggs of the Hermit Thrush, (*Hylocichla ustulata pallasii*); two of those of the Olive-backed Thrush, (*Hylocichla ustulata swainsonii*); three of the eggs of the Mockingbird, (*Mimus polyglottus*); two of the Brown Thrasher, (*Harporhynchus rufus*); and two of the Bluebird, (*Sialia sialis*). This enables Mr. Capen to show many of the variations to which most eggs are subject, and it renders the work far more valuable. This completeness of illustration is kept up throughout all the plates, and is one of the most valuable features of the book. Mr. Capen tells us in his preface that in his illustrations he has "made careful selections from many large collections to obtain the most typical, and in many cases where there is considerable variation, the most characteristic specimens." This of course is a matter about which individuals will differ, but certainly many people will fail to agree with Mr. Capen as to some of the specimens he figures being the most characteristic of the species. Take for instance his figures of the eggs of the Marsh Hawk, (*Circus hudsonius*). The illustrations represent two eggs, both of which are distinctly spotted, when the great majority of eggs of this species are wholly unspotted, and lighter in tint than either of Mr. Capen's figures. Again the illustration of the egg of Cooper's Hawk, (*Accipiter cooperi*), represents a specimen quite distinctly spotted, which does not occur in one set out of ten.

The two illustrations of the eggs of the Red-tailed Hawk, (*Buteo borealis*), may also be criticized as being open to the same objection. In fact the illustrations of the eggs of the various hawks are perhaps the least satisfactory of all in the book. A partiality appears to have been shown for brightly colored specimens of this family, and the result is that while the pictures are very beautiful, they can hardly be said to be characteristic. However, as was before said, this is a matter about which there may be much difference of opinion. No eggs vary more than those of the hawks, (except the *Alcedæ*), and the selection of typical specimens among them is therefore a matter of great difficulty.

There is one part of the book, however, about which there cannot be a difference of opinion, and that is regret that Mr. Capen has followed some of the older writers in giving the number of eggs laid by many species. Audubon was a man whom we will always remember with affection for his love of birds, and the beautiful pictures of them which he has left us, but when he said that the Great Horned Owl, (*Bubo virginianus*), laid from three to six eggs, we cannot but regard the statement as an error. There is no reason to suppose that those birds laid more eggs in his day than they do now, and no one at the present time has ever succeeded in finding more than four. Two and three are the common number. It is a pity, therefore, that Mr. Capen follows Audubon, and tells us that "as many as six have been found." So also is it a mistake to say of the Red-tailed Hawk, (*Buteo borealis*), that the eggs are "usually three in number, seldom more or less." Two are oftener found than three.

These are minor faults however, and detract very little from the value of the book. Taken altogether it is a most creditable work, and it is to be hoped that Mr. Capen will meet with sufficient encouragement to enable him to go on with his book and publish other volumes, which will, in time, make the book a complete history of the oölogy of North America.

J. P. N.

91000
MAY, 1886.

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BOSTON, MASS., MAY, 1886.

No. 5.

The Ring Ouzel.

(*Turdus torquatus*.)

BY HENRY KERR, BACUP, LANCASHIRE, ENGLAND.

This handsome member of the Thrush family, (*Turdina*), is one of the earliest Spring visitors on the hills and mountains of north-east Lancashire, and it usually puts in an appearance immediately after the advent of the Wheatear, our earliest visitor. I first made the acquaintance of this interesting bird in north-east Lancashire. Derbyshire is about the southern breeding range of this species. In summer it nests plentifully among the hills and rocky gorges, leaving in October, making its way slowly to the southern coast, previous to its over sea migration. As these birds go south in the fruit season they freely help themselves to garden produce, and many of these fruit loving birds are killed by gardeners and fruit-growers.

The Ring Ouzel, like its relations, the other Thrushes, have a variety of common names in different localities. It is called the Rock Ouzel, Ring Thrush, Mountain Blackbird and Moor Blackbird. In northeast Lancashire, southeast Yorkshire and the eastern border of Scotland it is best known by the latter name. It has a European range from Norway to Spain, and is also found in north Africa and Syria, where it spends the winter. It is tolerably common in the moorlands and mountains of Derbyshire, Yorkshire and the wilder parts of Northumberland and Durham, as also found in Scotland. It is also found breeding freely in the mountains of Ireland; it is plentiful, as might be expected, in Wales. In cultivated districts this species is frequently found feeding in gardens, while on migration southward and it is also occasionally seen in similar localities while on its way north in spring to its breeding quarters.

This bird is rather larger than the Blackbird, but its eggs are somewhat smaller although very similar in markings, and the nest and eggs, apart

from the locality, may be easily taken for those of the former bird, by those at least unfamiliar with the species. The bird has a rapid, steady flight, and except when near its nest it flies at a considerable height. Its food consists of worms, insects, snails, seeds, and wild fruits, such as the tillberry and the berries of the mountain ash and holly in autumn. The Ring Ouzel is not much of a songster, but it is most vocally inclined when incubation is in progress. Its song mainly consists of a few plaintive notes, uttered in a clear, warbling whistle. The male bird, as already stated, sings best when his mate is hatching, and perched on a stone wall, boulder, or branch of a stunted tree not far from the nest, its pleasant note may frequently be heard. I have occasionally managed to get within a few yards of the male bird when in song, and unseen, listen to its low but pleasing notes. When the female is flushed from the nest she flies off a few yards and utters a grating chatter and is most anxious until the intruder has departed.

In this almost sub-alpine corner of Lancashire the bird under notice nests high upon the moors and heathery banks or amid masses of rock. The nest, which is a rather less, and a trifle more compact than that of the Blackbird, is built of fibrous roots, lined with clay, and an inner lining of dried grass. The nest is also shallower than that of the last named species. The eggs, from three to four—I never found five in one nest—are a trifle smaller and more elongated than those of the Blackbird, and more profusely marked with brownish-yellow blotching on a greenish-blue ground. The eggs, as in many other species, frequently vary in size and markings. In this district the young are on the wing about the middle of July, and I believe the old birds rarely rear more than one brood. The Ring Ouzel derives its scientific name (*torquatus*) from the crescent-shaped white band on the neck, the rest of the plumage, except the wing-covers, being of a pure black, marked with faint crescent-shaped spots formed by the light edges of the feathers. The quills and wing-covers are shaped with grey and bor-

dered with brownish-grey. The tail is brownish-black, with the exception of the two outside feathers, which are edged with a delicate line of greyish-white. The male is about twelve inches in length and the bill is cream-colored. The female is not so dusky lined as her mate. Dr. Brehm is of the opinion that the Ring Ouzel cannot be regarded as the representation of a separate group, but is a connecting link between the Thrushes and Blackbirds, though some ornithologists are inclined to make it a separate species.

List of Birds Observed in the Vicinity of Santa Barbara, Cal., During the Year 1885.

READ BEFORE THE SANTA BARBARA SOCIETY OF NATURAL HISTORY, JAN. 26, 1886.

BY CLARK P. STREATOR. PART II.

(The nomenclature is that of the Smithsonian Check List, by R. Ridgway, 1881.)

Xanthocephalus icterocephalus, (Yellow-headed Blackbird). Migratory. Not often seen near this city.

Agelaius phoeniceus, (Red-and-buff-shouldered Blackbird). I have found a few birds which I am positive are of this species. I have shot specimens at all seasons of the year.

Agelaius phoeniceus gubernator, (Red-and-black-shouldered Blackbird). An abundant resident. Breeds.

Agelaius tricolor, (Red-and-white-shouldered Blackbird). Spring and fall migrant.

Sturnella neglecta, (Western Meadow Lark). Common resident. Breeds, but their nest is difficult to find.

Icterus cucullatus, (Hooded Oriole). Summer resident; not common. Breeds.

Icterus bullocki, (Bullock's Oriole). Common summer resident. Breeds.

Scolecophagus cyanocephalus, (Brewer's Blackbird). Common resident. Breeds.

Corvus frugicorvus caurinus, (Northwestern Fish Crow). Common resident. Breeds. This Crow is much more tame than the eastern one. On one occasion I walked within fifteen feet of one before it flew.

Picicorvus columbianus, (Clarke's Nutcracker). This bird was observed on the mountains by a friend about five or six miles from this city, and it may be common in the pines on top of them.

Pica nuttalli, (Yellow-billed Magpie). Resident. Breeds. Probably once common, but now rare. One was shot in about three miles of Santa Barbara this winter.

Cyanocitta stelleri frontalis, (Blue-fronted Jay).

Irregular winter and spring resident. Last year they were common and remained until after the breeding season. This year I have found none.

Aphelocoma californica, (California Jay). Resident; not very common. Breeds.

Eremophila alpestris chrysolaema, (Mexican Shore Lark). Very common summer resident. Breeds.

Tyrannus verticalis, (Western Kingbird). Common summer resident. Breeds. A very few remain through the winter.

Myiarchus cinerascens, (Ash-throated Flycatcher). Common spring migrant.

Sayornis sayi, (Say's Pewee). A quite common winter resident.

Sayornis nigricans, (Black Pewee). Resident. Breeds.

Contopus richardsoni, (Western Wood Pewee). Very rare. I have only collected one specimen.

Empidonax hammondi, (Hammond's Flycatcher). Rather common summer resident. Breeds.

Trochilus alexandri, (Black-chinned Hummingbird). Common summer resident. Breeds.

Calypte annae, (Anna's Hummingbird.) Resident. The most common Hummingbird. Breeds. The nests are found very common.

Selasphorus rufus, (Rufous Hummingbird). Summer resident; not so common as the two above. Breeds.

Phalaenoptilus nuttalli, (Poor-will). Not common. I have only collected three specimens from this place.

Chordeiles popetue henryi, (Western Nighthawk). Not common near this city.

Picus pubescens gairdneri, (Gairdner's Woodpecker). Uncommon resident. Breeds.

Picus nuttalli, (Nuttall's Woodpecker). Resident. I have never found its nest.

Melanerpes torquatus, (Lewis's Woodpecker). Abundant resident last winter. This winter I have found none.

Melanerpes formicivorus bairdi, (Californian Woodpecker). Resident. Rather common about the oak trees. Breeds.

Colaptes auratus mexicanus, (Red-shafted Flicker). Common resident. Breeds.

Colaptes auratus hybridus, ("Hybrid" Flicker). I have found this bird on about a half a dozen occasions.

Ceryle alcyon, (Belted Kingfisher). Migratory. Not very common.

Geococcyx californianus, (Road-runner; Chaparral Cock). Resident. Common.

Aluco flammeus americanus, (American Barn Owl). Common resident. Breeds.

Asio americanus, (American Long-eared Owl).

Common in some parts of the county, but not near this city.

Asio accipitrinus, (Short-eared Owl). Rare. I have never collected but one specimen from this place.

Scops asio, (Little Screech Owl). Common. Breeds. I do not find this Owl to be a variety.

Bubo virginianus subarcticus, (Western Horned Owl). Not very common. Breeds.

Speotyto cunicularia hypogaea, (Burrowing Owl). Common. Breeds. Lives in the ground-squirrel holes.

Æsalon columbarius, (Pigeon Hawk). Common winter resident.

Tinnunculus sparverius, (Sparrow Hawk). Very common resident. Breeds.

Pandion haliaetus carolinensis, (American Osprey; Fish Hawk). Rarely seen about this city.

Elanus glaucus, (White-tailed Kite). Rare. I have noticed only a few specimens.

Circus hudsonius, (Marsh Hawk). I have noticed this Hawk only in winter.

Accipiter cooperi, (Cooper's Hawk). Rather uncommon. Found in winter.

Accipiter fuscus, (Sharp-shinned Hawk). Common in the colder months.

Buteo borealis calurus, (Western Red-tail) Resident. Not very common. Breeds.

Aquila chrysaetos canadensis, (Golden Eagle). Uncommon. I have seen only three or four specimens. I had one adult specimen that I mounted about two weeks since. It is the largest bird I have seen.

Haliaetus leucocephalus, (Bald Eagle; Gray Eagle). Rather common. Breeds. Quite a number of nests have been found on the islands every year.

Pseudogryphus californianus, (Californian Condor). This gigantic bird is now nearly extinct, but specimens may be occasionally seen in the mountains back of the city during the winter months.

Cathartes aura, (Turkey Buzzard). Common in summer; a few winter with us. Breeds.

Columba fasciata, (Band-tailed Pigeon). Winter resident. They are sometimes observed near this city.

Zenaidura carolinensis, (Mourning Dove). Resident. Common. Breeds.

Oreortyx picta, (Mountain Quail). Rare. Resident high up in the mountains.

Lophortyx californica, (Californian Quail). Quite an abundant resident. Breeds.

Kingbird and Colorado Beetle.

I have known the Kingbird to feed on the Colorado potato beetle. Have others noted it?—*Theo. G. Lemmon.*

OÖLOGY.

J. PARKER NORRIS, Editor.

The Editor assumes no responsibility for those articles which have the names of the writer attached.

A Series of Eggs of the Red-tailed Hawk.

The eggs of the Red-tailed Hawk (*Buteo borealis*) are subject to great variation, and it is only by examining a series that anything like an average description of them can be made. The following account of a series of twenty-one sets, from different localities, shows how great the variations are, both as to size and colorings:

Set I. Comal County, Texas, March 2, 1883. No. 1: 2.40x1.78. Dull white, very indistinctly spotted near smaller end with very faint brown, apparently in the shell. No. 2: 2.42x1.76. Dull white, spotted so indistinctly with grayish, as to appear wholly unmarked until a close inspection reveals the contrary to be the case. No. 3: 2.42x1.79. Dull white with a few smeared spots of brownish near the smaller end. At a short distance Nos. 1 and 2 appear entirely unspotted, and No. 3 is so slightly so that the three eggs present a very unusual appearance. This is the more so on account of their elongated shape.

Set II. Giddings, Texas, March 21, 1884. No. 1: 2.34x1.79. Dull white, marked near smaller end with brown, of varying shades. No. 2: 2.34x1.74. Dull white, very faintly marked with gray. Appears unspotted at a short distance.

Set III. Comal County, Texas, March 13, 1882. No. 1: 2.34x1.82. Dull white, marked all over with small light brown spots, which have a streaky appearance. No. 2: 2.46x1.79. Dull white, very faintly clouded with light gray.

Set IV. Giddings, Texas, April 4, 1885. No. 1: 2.25x1.87. Dull white, slightly stained. Marked with dark brown spots, which are confluent, and form a circle near the large end. No. 2: 2.22x1.86. Dull white, stained. Faintly marked with small faint brown spots, mostly towards the smaller end.

Set V. Comal County, Texas, May 20, 1879. No. 1: 2.21x1.78. Dull white, spotted with reddish brown. The spots are nearly all clustered at the smaller end, where they are confluent, leaving the rest of the surface almost unspotted. No. 2: 2.29x1.78. Dull white, marked with small reddish brown spots, which are distributed all over the surface.

Set VI. Comal County, Texas, March 4, 1883.

No. 1: 2.30x1.80. Light bluish white, marked with reddish brown. The markings are nearly all at the larger end, where they are partly confluent, and form a wreath. No. 2: 2.28x1.81. Light bluish white, marked with large blotches of reddish brown. The spots are larger near the greater end.

Set VII. Comal County, Texas, March 18, 1883. No. 1: 2.31x1.75. Very light bluish white, marked with bright reddish brown spots which are quite small, and inclined to form a circle near the larger end, where they are mostly found. No. 2: 2.28x1.82. Very light bluish white, marked with bright reddish brown spots. These are clustered near the smaller end. This egg is slightly stained.

Set VIII. Baxter, Iowa, March 17, 1885. No. 1: 2.41x1.84. Bluish white, marked with a large number of different sized blotches of very bright reddish brown. No. 2: 2.37x2.00. Bluish white, very heavily marked with large blotches of very bright reddish brown. Some of the blotches are confluent at the larger end. These are the largest eggs, and the most heavily colored in the series; and it is doubtful if a handsomer set of this species was ever found. Their size is also unusual.

Set IX. Washington, Connecticut, April 14, 1884. No. 1: 2.33x2.00. Bluish white, smeared all over with brownish, giving the egg the appearance of having been stained. A few reddish brown spots. No. 2: 2.34x1.99. Bluish white, entirely unspotted.

Set X. Baxter, Iowa, April 9, 1885. This set is particularly interesting, as it originally consisted of four eggs, but one of them was found so badly broken in the nest that it was impossible to preserve it. No. 1: 2.40x1.81. Dull white, spotted with brown. The spots are small, and closer together at the large end. The surface is also nest-stained. No. 2: 2.32x1.89. Dull white, marked with faint brownish and light purplish streaks, pretty evenly distributed over the whole egg, but rather thicker at the larger end. No. 3: 2.43x1.91. Dull white, very faintly streaked with light gray. Appears unmarked at a short distance.

Set XI. Washington, Connecticut, May 25, 1884. No. 1: 2.29x1.82. Dull white, marked with faint brown and purplish spots and specks. No. 2: 2.44x1.83. Dull white, faintly marked with indistinct specks of brown, and light purplish, principally near the smaller end.

Set XII. Washington, Pennsylvania, April 17, 1884. No. 1: 2.37x1.91. Dull white, faintly marked with light brown all over the surface. Has exactly the appearance of mud, but it is not. No. 2: 2.44x1.79. Dull white, faintly marked

with light brown over the whole egg. The specks and spots tend to become confluent near the larger end.

Set XIII. Washington, Pennsylvania, March 13, 1884. No. 1: 2.45x1.86. Dingy white, stained all over the surface, and marked with a few small spots of brown. No. 2: 2.37x1.84. Dingy white, very much stained. Marked with light purplish and a few brownish spots.

Set XIV. Washington, Connecticut, April 24, 1883. No. 1: 2.20x1.80. Dull white, with a few streaks of brown. Very much stained. No. 2: 2.23x1.84. Dull white, marked with small brown spots. Much stained.

Set XV. Washington, Connecticut, April 13, 1884. No. 1: 2.39x1.78. Dull white, marked with brown spots, which are thicker at the greater end. No. 2: 2.31x1.84. Dull white, marked with brown, which is splashed around the greater end. Stained.

Set XVI. Washington, Connecticut, April 9, 1884. No. 1: 2.17x1.80. Dingy white, much stained. Marked all over the surface with small spots of brown. No. 2: 2.20x1.78. Dingy white, stained. Marked over the whole surface with small brown spots.

Set XVII. Washington, Connecticut, April 23, 1884. No. 1: 2.43x1.87. Dingy white, stained. Very faintly marked with a few indistinct light gray specks. At a short distance it appears wholly unmarked. No. 2: 2.36x1.90. Dingy white, stained. Beautifully marked with bright brown blotches and spots. The former form an indistinct circle at the larger end, where they are confluent.

Set XVIII. Washington, Connecticut, April 8, 1884. No. 1: 2.43x2.00. Dull white, stained. Marked with blotches of bright brown, more towards the smaller end. No. 2: 2.47x1.00. Dingy white, stained. Marked with blotches of light brown, and light purplish, mostly at the larger end.

Set XIX. Washington, Connecticut, April 19, 1884. No. 1: 2.49x1.96. Dingy white, much stained. Indistinctly marked with light purplish. A very pointed egg for this species. No. 2: 2.42x1.80. Dingy white, much stained. Boldly marked with dark brown spots, tending to form a circle around the smaller end. Also some indistinct spots of light purplish. Quite pointed. No. 3: 2.39x1.80. Dingy white, very much stained. Marked with brown blotches, more of them near the smaller end. All three of the eggs in this set are unusually pointed for *Butor borealis*.

Set XX. Iowa City, Iowa, April 11, 1881. No. 1: 2.41x1.93. Dingy white, very much stained. Boldly marked with large blotches of bright brown, becoming confluent at smaller end. No.

2: 2.31x1.87. Dingy white, stained, marked with blotches and specks of dark brown, principally near the larger end. No. 3: 2.34x1.88. Dingy white, much stained. Marked all over the surface with bright brown streaks and specks.

Set XXI. Oxford, Mississippi, April 8, 1885. No. 1: 2.22x1.76. Light bluish white, slightly stained. Marked with a few very dark and large blotches of brown, mostly at the smaller end. No. 2: 2.25x1.76. Light bluish white, slightly stained. Marked with a large number of light purplish specks all over the surface, and a few brown spots. No. 3: 2.22x1.76. Light bluish white, very heavily marked with very dark brown blotches.

Curious Set of Eggs of the Wood Thrush.

A very singular set of eggs of the Wood Thrush (*Hylocichla mustelina*) may be thus described:

No. 1 measures 1.13x.84, and is of the normal color.

No. 2 is 1.09x.83, and is also of the usual color.

No. 3 is .87x.62, and is of the same color as the two preceding eggs.

No. 4 is .88x.62 and is of a peculiar drab greenish color.

They were found at Milton, Mass., on June 26, 1883, and the parent bird was seen. It will be noticed that the first two eggs are larger than the usual size for this bird, (which is from 1.00x .75 to 1.08x.70,) while the other two are "runts." The greenish-drab one is different in color from any eggs of this species that the present writer has seen.

A Season's Notes from Bristol County, Mass.

A Brief Review from My Note Book of 1885.

BY F. M. MERCK.—PART II.

(Continued from page 39.)

The Scarlet Tanagers were very numerous during the second week of June, and a nest was found June 17th, placed in a light forest oak.

The handsome and vivacious Redstart is now in the full tide of his domestic cares, and I notice several of their neat structures as I walk through an alder thicket, where I also flushed a Woodcock with a fluttering brood of young.

The Least Flycatcher is heard about the houses in great numbers as he overlooks his mate, who probably is setting in a nest placed in the very same tree as last year, for *Empidonax* is very much attached to his old resorts and often confines

himself to the limit of a single orchard during his stay with us.

June 8th I went down to spend a fortnight with my friend, Mr. F. H. C., and we spent our active time afield. Among the notes I find chronicled I extract a few only. Here I noted the Great-crested Flycatcher, which Mr. C. informs me is a very rare visitor in his section of the county, and is the first I have ever personally seen. We are so fortunate as to find the nest in an old hollow limb of an ancient apple tree, and the four eggs it contains look very pretty as they lay upon their nest of the miscellaneous composition of rabbits fur, hair, feathers, moss and a few bits of the cast skin of the snake. We visit the orchard tenanted by the Blue Yellow-backed Warblers and note their curious nests, and pretty delicate contents. The nest of the Ruby-throated Hummer is found, looking like a bunch of lichens which the wind had cast on the bare, horizontal branch of a "hornbeam" shrub. Mounting a convenient stone wall we could look into the nest and see the tiny treasures it contained.

A ride down the valley of the Palmer river gives me a glimpse of the outskirts of the Fish Hawk colony, but all my friend's stragetems, usually so successful in May, fail to secure me a specimen of the bird for my collection, for now with no eggs to leave, and the young grown lusty, they do not return to their nests while the smell of cold iron is in the air.

We notice on our ride a Chickadee fly from a hole in a birch stub, and my friend informs me that the same nest was occupied last season, presumably by the same bird. A few nests of the Bobolink are found on the ground in the meadows, and the Quail is seen with her little brood, but at the note of alarm from the old bird the juveniles are invisible. During the latter part of June the early breeders have their troop of young on the wing, and by July 10th the immature birds of the year are plenty.

July 17th a specimen of the Yellow-winged Sparrow is taken, and placed on record as the first local specimen. Again the Hairy Woodpeckers are noted, and doubtless they nested in my vicinity, as I think I saw the young birds. I found another nest of the Great-crested Flycatcher with young soon after my return from my visit, and could but wonder what induced this more tropical Flycatcher to breed with us so much more commonly than formerly, and in the same orchard that northern breeder, the Hairy Woodpecker, to remain and excavate its home. Birds of widely different breeding range and locally rare must have been induced by some unknown phenomena to incubate in this county.

By the middle of August the Swallows are flocking together and the Bobolinks are gorging themselves on the seedstalks, and soon will be fit for the southern epicure. About this time my notes must close, the increase of business cares confines me from the field, and my companions are scattered, some to the office and desk, while the one I have quoted in these notes writes me from the Maine wilderness.

Early Breeding of Anna's Hummingbird.—The Sequel.

BY W. OTTO EMERSON, HAYWARDS, CAL.

In the March number of THE ORNITHOLOGIST AND OÖLOGIST I related how a pair of Anna's Hummingbirds, (*Calypte anna*), had been to their nest and laid their eggs by January 19, 1886, in this locality; and having also told of the sad fate which befell their eggs, I wish to add a short note of the subsequent history of these little birds.

On February 19, 1886, I found their second nest, containing two eggs, which were hatched by February 22d. On the 26th of that month a little brownish down could be noticed along the middle of the backs of the young birds; and on March 1st, pin feathers began to appear. By March 9th, they were well feathered to the bill, and the wings made some show. The bill also began to lengthen out, as up to this time it had been quite short. The mother bird did not hover over them now, since they had acquired their feathers. They quite filled the little nest, and they appeared like two little rusty greenish feather balls, lying alongside of each other. They kept their bright black bead-like eyes on the watch for their parents, who continually brought them food.

We had beautiful, warm, sunshiny days until March 16th, when a cold rain set in, and it rained all day on the 17th. It cleared off that evening, and it was so cold that I did not think the little nestlings could keep warm; but I did not take a look at them till the morning of the 19th, when I found them both dead. They had perished from the cold, probably on the frosty night of the 18th, for their feathers were all puffed out, and their feet close to the down on the bottom of the nest.

I brought the dead birds and the nest home; and I have skinned them and put them in the nest, which is placed beside the former one which I found on January 16, 1886; and they together furnish the record of the early nesting of this species at Haywards, four miles from the bay shore, and twenty-two miles from San Francisco's wind-blown hills.

List of Birds Near Philadelphia with the Dates that Sets of Eggs were Taken.

BY HARRY G. PARKER, CHESTER, PA.

1. Wood Thrush, (*Hylocichla mustelina*), May 26th to June 10th. Common.
2. Wilson's Thrush, (*Hylocichla fuscescens*), June 6th. Rare.
7. American Robin, (*Merula migratoria*), May 1st to June 30th. Common.
12. Catbird, (*Galoscopes carolinensis*), May 24th. Common.
13. Brown Thrasher, (*Harporhynchus rufus*), May 13th to June 15th. Common.
22. Bluebird, (*Sialia sialis*), May 15th to June 30th. Common.
41. Black-capped Chickadee, (*Parus atricapillus*), May 2d. Rare.
51. White-bellied Nuthatch, (*Sitta carolinensis*), May 1st. Rare.
60. Carolina Wren, (*Thryothorus ludovicianus*), April 13th to June 2d. Rare.
63. House Wren, (*Troglodytes aedon*), May 1st to 15th. Common.
67. Long-billed Marsh Wren, (*Telmatodytes palustris*), June 12th to 18th. Common.
74. Black-and-White Creeper, (*Mniotilta varia*), June 4th. Rare.
77. Worm-eating Warbler, (*Helminthothenus vermivorus*), June 3d. Rare.
79. Blue-winged Yellow Warbler, (*Helminthophaga pinus*), May 28th. Rare.
88. Blue Yellow-backed Warbler, (*Parula americana*), June 10th. Rare.
93. Summer Yellow Bird, (*Dendroica aestiva*), June 1st to 10th. Common.
115. Golden-crowned Thrush, (*Siurus auricapillus*), June 10th. Common.
119. Kentucky Warbler, (*Oporornis formosa*), June 1st. Rare.
122. Maryland Yellow-throat, (*Geothlypis trichas*), June 1st to 10th. Common.
123. Yellow-breasted Chat, (*Icteria virens*), May 30th. Common.
128. American Redstart, (*Setophaga ruticilla*), June 5th. Common.
135. Red-eyed Vireo, (*Vireosylva olivacea*), June 13th. Common.
139. Warbling Vireo, (*Vireosylva gilva*), June 5th. Common.
143. White-eyed Vireo, (*Vireo noveboracensis*), June 10th. Rare.
151. Cedar Waxwing, (*Ampelis cedrorum*), June 15th. Rare.

152. Purple Martin, (*Progne subis*), June 2d. Common.
153. Cliff Swallow, (*Petrochelidon lunifrons*), May 28th. Common.
154. Barn Swallow, (*Hirundo erythrogastra*), May 28th. Common.
157. Bank Swallow, (*Cotile riparia*), May 26th. Common.
161. Scarlet Tanager, (*Pyrranga rubra*), May 30th. Not common.
- E. S. English Sparrow, (*Passer domesticus*), April 3d to Oct. Common.
181. American Goldfinch, (*Astragalinus tristis*), July 20th to Aug. 20th. Common.
197. Grass Finch, (*Poæcetes gramineus*), May 12th to June 20th. Common.
198. Yellow-winged Sparrow, (*Coturniculus passerinus*), June 16th. Rare.
211. Chipping Sparrow, (*Spizella domestica*), May 9th to June 20th. Common.
214. Field Sparrow, (*Spizella pusilla*), May 16th. Common.
231. Song Sparrow, (*Melospiza fasciata*), May 7th to June 30th. Common.
233. Swamp Sparrow, (*Melospiza palustris*), May 20th to July 4th. Common.
237. Chewink; Towhee, (*Pipilo erythrophthalmus*), June 1st to 10th. Common.
242. Cardinal Grosbeak, (*Cardinalis virginianus*), April 13th to May 30th. Common.
244. Rose-breasted Grosbeak, (*Zamelodia ludoviciana*), June 1st. Rare.
248. Indigo Bunting, (*Passerina cyanea*), May 30th. Common.
258. Cowbird, (*Molothrus ater*), April 10th to June 25th. Common.
261. Red-and-buff-shouldered Blackbird, (*Agelaius phoeniceus*), June 1st. Common.
263. Meadow Lark, (*Sturnella magna*), May 25th to June 30th. Common.
270. Orchard Oriole, (*Icterus spurius*), June 1st. Common.
271. Baltimore Oriole, (*Icterus galbula*) June 1st. Common.
278. Purple Grackle, (*Quiscalus purpureus*), April 25th. Common.
282. Common Crow, (*Corvus frugicorvus*), April 12th. Common.
289. Blue Jay, (*Cyanocitta cristata*), April 30th. Common.
304. Kingbird; Bee Martin, (*Tyrannus carolinensis*), June 3d. Common.
312. Great Crested Flycatcher, (*Myiarchus crinitus*), June 10th. Common.
315. Phæbe Bird; Pewee, (*Sayornis fuscus*), April 10th to June 1st. Common.
320. Wood Pewee, (*Contopus virens*), June 1st to 10th. Common.
324. Acadian Flycatcher, (*Empidonax acadicus*), June 1st to 10th. Common.
326. Least Flycatcher, (*Empidonax minimus*), June 15th. Rare.
335. Ruby-throated Hummingbird, (*Trochilus colubris*), June 16th. Common.
351. Chimney Swift, (*Chaptalia pelagica*), July 1st to 6th. Common.
354. Whip-poor-will, (*Caprimulgus vociferous*), June 9th. Rare.
357. Nighthawk, (*Chordeiles popetue*), June 1st. Rare.
361. Downy Woodpecker, (*Picus pubescens*), April 25th to May 20th. Rare.
375. Red-headed Woodpecker, (*Melanerpes erythrocephalus*), June 6th. Common.
378. Yellow-shafted Flicker, (*Colaptes auratus*), May 13th to June 10th. Common.
382. Belted Kingfisher, (*Ceryle alcyon*), May 10th to July 10th. Common.
387. Yellow-billed Cuckoo, (*Coccyzus americanus*), June 10th to 16th. Not common.
388. Black-billed Cuckoo, (*Coccyzus erythrophthalmus*), June 10th to 16th. Not common.
394. American Barn Owl, (*Aluco flammeus americanus*), April 13th to 18th. Rare.
402. Little Screech Owl, (*Scops asio*), April 12th to 19th. Not common.
436. Red-tailed Hawk, (*Buteo borealis*), April 25th. Rare.
443. Broad-winged Hawk, (*Buteo pennsylvanicus*), May 5th to 16th. Rare.
460. Mourning Dove, (*Zenaidura carolinensis*), April 10th to June 1st. Common.
480. American Quail; Bob-white, (*Ortyx virginiana*), May 15th to July 15th. Rare.
494. Green Heron, (*Butorides virescens*), June 1st. Common.
516. Killdeer, (*Oryzochus vociferus*), June 10th. Common.
555. Bartram's Sandpiper; Field Plover, (*Bartramia longicauda*), June 13th. Rare.
557. Spotted Sandpiper, (*Tringoides macularius*), June 20th. Common.*

*During October, 1885, a correspondent in Texas asked me to furnish him a list of the species which I had found breeding Delaware Co., Penn., with dates. I complied, and was surprised a week ago by receiving advance sheets of the *Sunny South Oölogist*, in which the list I had given last fall was made the subject of an article. About one month ago I was requested by one of the editors of the O. and O. to make out a list of Delaware Co. breeding birds, and this second list was compiled with a greater degree of care than the former one, and also contained several of the *Sylvicolidae* which I had found nesting, but owing to their extreme rarity, had not quoted them to my Texan friend. This will serve as an explanation of the publication of a somewhat similar article in another magazine.—Harry G. Parker, April 5th, 1886.

THE ORNITHOLOGIST —AND— OÖLOGIST.

A MONTHLY MAGAZINE OF
NATURAL HISTORY,

ESPECIALLY DEVOTED TO THE STUDY OF

BIRDS,

THEIR NESTS AND EGGS.

DESIGNED AS A MEANS FOR THE INTERCHANGE OF NOTES
AND OBSERVATIONS ON BIRD AND INSECT LIFE.

FREDERIC H. CARPENTER, Editor,

REHOBOTH, MASS.,

FRANK B. WEBSTER, Publisher,

409 WASHINGTON, ST., BOSTON, MASS.

Editorial.

The publisher announces that numbers 9—12, Vol. X. of THE ORNITHOLOGIST AND OÖLOGIST cannot be supplied, except to those who will take the complete volume, as the calls for those numbers have been so numerous as to exhaust the supply of duplicates, and it destroys the utility of the volume to send out these copies alone.

The question of bird protection is becoming more widely discussed than ever. That something should be done to stop the slaughter is the expression of nearly all who interest themselves to ascertain the facts. *Needless* destruction, as shown by the millinery trade, should cease, and our readers should help on the work of humanity by pledging themselves against such a hideous crime. We would refer such to the Audubon Society, 40 Park Row, New York City, who will furnish circulars and pledges to applicants.

Before us lie five Check Lists of N. A. Birds, and in arrangement no two are alike. We suppose that as the science advances it is necessary to keep pace with it, by issuing lists comprising the latest discoveries in the ornithological science, and

now that a list is published under the auspices of the authorities on nomenclature we hope that it may not be again tampered with for a sufficient time to allow ornithologists to systemize their collections by its instructions. We doubt if the A. O. U. List will come into universal use at present, as its price (\$3) will place it beyond the reach of many who may desire several lists for use in labeling and exchange.

The protection of birds is now being urged by both sentiment and statistics, and this endeavor to stop the *wanton* destruction of our birds, should secure the efficient aid of all who desire a perpetuation of our race of songsters. Naturally, the cause which brought about this lamentable decrease in the feathered tribe, receives the attention of all who are interested in the matter. By some unaccountable means the taxidermist is referred to as the guilty party, and as the fell destroyer of bird life. While admitting fully that the taxidermist does destroy life to a certain extent, we must demur against the ban of condemnation under which he is placed.

It might be well to say that the taxidermist is not to be confounded with the "mutilator of bird skins," who works in the interest of the millinery trade, neither does he aspire to be ranked as a "scientist" (as the term is now used,) but occupying his own field of action, he invites inspection as to his methods and record.

In this dilemma they are deserted by the class of men who should, from a sense of justice, have firmly stood by them. We refer to certain of the professional ornithologists, many of whom have employed these taxidermists to collect for them. If we interpret law aright, the principal is held responsible with the agent; but these associated "scientists," when asked to give the reason of the "scarcity of birds" will, with a Pharisaical air, point the scornful finger at the taxidermist.

We desire no undue license for the taxidermists; they have their rights and ask for no more, and we have no doubt but that they will submit to more restrictions than any other class; but when they find privileges denied them, and others allowed to collect with impunity, under the banner of scientific investigations, they have a right to demand an equality, and from personal interviews and extensive correspondence with the fraternity, we are in a position to foresee the result, and the taxidermists should be tendered a due acknowledgement of their privileges, or else when aroused to united action they shall take such methods as will prove to the associated "scientists" that the blow which was intended for the taxidermists, has severed from the tree the limb upon which they themselves perched in fancied security.

Obituary.

— CHAS. W. GUNN.

It is again my unpleasant duty to record the loss of a prominent Michigan ornithologist. Less than twelve months ago the O. and O. announced the death of Dr. H. A. Atkins, the veteran ornithologist of the State, and we now have to mourn the additional loss of a well known naturalist—Mr. Charles W. Gunn, of Grand Rapids.

He was an extensive traveler in the United States and had visited nearly every part of the Union in pursuit of specimens in his favorite branches—birds and eggs. He visited California four times. Twice he spent winters in Florida. He also visited Colorado, Panama and many other quarters in the east and north. During the past few years much of his traveling was on account of his health, but during even his last sojourn in Southern California he earnestly prosecuted his studies.

He died the 15th of January, 1886, aged 28 years. His large and valuable collection attests his interest in natural history, while his pleasing articles which frequently appeared in the O. and O. and other periodicals in the past, will recall his name to many who have read them but never seen him. Great is his loss to his numerous friends, and to the naturalists of the United States. G.

Practical Taxidermy.

BY FRANK B. WEBSTER.

CHAPTER X.—DRIED SKINS.

Skins that have been carefully prepared can be at any time relaxed and brought into a condition that is about the same as when taken off from the body. Like all other departments of the art, it only requires care and patience. As it is requisite to be able to make up skins, when time is valuable in the collecting season, so it is to be able to mount them afterwards. The following is the simple and practical method: Prepare the sawdust sweat box, as previously described. Take the skin that is to be mounted and bury it in the sawdust, which should be thoroughly damp but not too wet. Let the skin remain from twenty-four to forty-eight hours, or longer, depending upon its size. When somewhat relaxed open it where it was sewed up and take out all the filling. *Now refill it with wet sawdust; this should be quite wet.* Wrap wet cotton about the feet and again bury it in the sawdust in the sweat box. Let it remain until it is well relaxed and soft. This requires careful attention. Examine it morning and night. If left in too long the feathers are apt to start. [The time varies from two to five days, depending upon the subject.] With a little experience you can determine when it is ready.

When soft enough take the skin, shake off the sawdust and remove it from the inside. *Then turn the skin completely inside out to base of beak, and turn it back.* This will break the stiffness and cause the feathers to assume their original; any bunched place should be manipulated with the fingers till made soft; open and shut the wings. If the plumage is damp use a soft brush and by brushing and blowing it with the breath it will dry rapidly. Plaster is not required. This manipulation is the important part. If the skin was well cured there will be very little trouble with the feathers starting, but avoid pulling them. Should a few come out they can be replaced with paste when the specimen is mounted. Any bend or crimp in the wing or tail feathers, may be instantly removed by holding it in the steam from a kettle. The whole secret is to manipulate the skin till perfectly soft. Some advise, in the case of a large bird, that it be immersed in water for a few hours, then cover with plaster and let it remain a while. This will dry the feathers and the skin will remain soft.

When the skin is prepared as above, proceed the same as with a fresh one. Where the feet and legs are large it will be found a help to use the leg drill to make a hole for the leg wires. Soft

annealed wire will sometimes bend in forcing it through. I have given this subject much attention and consider it useless to give any other than the above method. There is no secret except patience and perseverance.

RECEIPT FOR MAKING BIRD LIME, ETC.

By request I give the following receipt for bird lime: Take one pint of linseed oil, put it in a pot of not less than three times that capacity; place over a slow fire and stir while boiling with a wooden spatula; continue until it is thick as required. This can be determined by cooling the spatula in water and trying if it will stick to the hand. When sufficiently done pour in cold water and it will be ready for use. Use care that the pot is one that is not liable to break by the fire. This is a good undertaking for a mid-summer day, when the thermometer is 112° in the shade.

A white paint that will not turn yellow can be made from either of the following formulas:

1. Mix white lead and varnish, add a very little blue, not enough to shade it. 2. Dry white lead ground in shellac; add enough blue to counteract the yellow of the shellac. Keep in large mouthed bottle, well corked. If it becomes thick from standing, thin with alcohol. It is the oil in paint that turns yellow in time.

CORRECTIONS.—"Practical Taxidermy," page 57, second line from bottom of page, read *shape* for *shake*. Page 58, sixteenth line from foot of first column, for "They claim the skull," etc., read "They claim the *skin*," etc.

A Pennsylvania Law Against Hawks.

BY J. P. N.

On the 23d day of June, 1885, the Governor of Pennsylvania approved a law which had been passed by the Legislature of that Commonwealth, and which is entitled "An Act for the destruction of wolves, wildcats, foxes, minks, hawks, weasels and owls, in this Commonwealth." (See laws of 1885, p. 141). This act provides, *inter alia*, that there shall be paid, by the respective counties in which the same are slain, "for every hawk fifty cents, and for every owl, except the Acadian Screech or Barn Owl, which is hereby exempted from the provisions of this act, fifty cents." It further provides that upon the production of the birds before a magistrate, alderman, or justice of the peace, in the presence of the person who killed the birds, the officer shall cut off the heads of the latter, and burn them. Thereupon he shall deliver to the person producing the birds, a certificate stating their number and kind, and on the production of this certificate to the commissioners of the county, they shall give an

order on the county treasurer for the payment of the premium.

This is a most unwise law, and one which has evidently been passed in the interest of sportsmen wishing to preserve game, rather than for the benefit of farmers. Let any intelligent person carefully read the article entitled "A Plea for the Hawks," which appeared in the March number of THE ORNITHOLOGIST AND OÖLOGIST, and it will be apparent that hawks are among the most useful birds to be found in the State. The prejudice against them is due to ignorance, and the law above cited is a disgrace to the intelligence of the law-makers of Pennsylvania, and it is hoped that it will be speedily repealed.

Florida Birds in February, 1886.

BY A. L. BROWNE, ORLANDO, FLA.

The Red-winged Blackbirds and Purple Grackles have this month far outnumbered any other two species, except perhaps the Turkey Buzzard and Black Vulture. They were to be found in almost all situations, usually searching on the ground for food or flying over in flocks large and small besides many single birds.

Though singing during the entire month, it was not until the last part that their peculiar notes became conspicuous; then they could be heard from morning until night. The two species frequented the same places together but each kept by itself.

Robins also were as plenty as last month, and their quick alarm notes were a common sound, especially in the woods. A favorite situation was in the midst of the pines on the land which had been recently burned over, and thus cleared of the tall grass, leaving excellent feeding ground.

The Blue-gray Gnatcatcher, Savanna Sparrow, Maryland Yellow-throat and Yellowbird were not seen; the last two I think have left for good. Meadow Larks were abundant all the month in the pines. Chipping Sparrows greatly decreased in numbers, in fact became quite scarce. Red-poll Warblers were rather less plenty.

The Yellow-rump Warblers which had remained mostly in the hummocks since November, spread gradually through the pines and into orange groves and even the city; here I first saw them on the 13th, about some low bushes near a house. Saw them there frequently afterwards; as usual they were always actively engaged in catching insects. In the pines they were often in company with the Red-poll Warblers. The first prominent arrival from the south appeared in the Purple Martin, on the 18th, when I saw a female

flying about in the city. At sunset on the 19th, no less than seven, both males and females, appeared coursing about. One male uttered a few notes once in the usual strain but otherwise they were silent. From that date they were plenty, and rather supplied the place of the White-bellied Swallow which has been scarce this month, only appearing on two or three of the warmest days and then in but small numbers.

On the 18th I was attracted to a cypress swamp by the beautiful singing of several Cardinal Grosbeaks. They were having a glorious contest. I have not known them so abundant before. Just outside the swamp under some scrub palmettoes I saw a Florida Chewink searching about on the ground. I have not seen or heard much of the two varieties of this bird lately, though they are probably as plenty as ever in the favorable places.

In this swamp I saw a pair of Red-bellied Woodpeckers flying about together from tree to tree, calling to each other with their loud, peculiar notes; they seemed to be searching for something besides food, a nesting place I thought. Here too I noticed a Hermit Thrush and on three other occasions the same day I saw as many different individuals in or about high hummocks.

On the 23d, while walking through the pines, I discovered a hole in a tall dead stub, upon which a male Bluebird was sitting. In a pine close by was the female and while I was watching she paid several visits to the entrance, once going entirely within and staying some time.

The Mockingbirds have this month grown as full of song as it seems possible for them to be, and it is pouring out all the day and often in the night in the most curious mixed up fashion imaginable. Prominent among their excellent imitations are notes of the Blue Jay, Sparrow Hawk, Red-cockaded Woodpecker, Bluebird, Brown-headed Nuthatch, Killdeer, Purple Martin and Kingbird. Fierce quarrels became common among them late in the month.

Flickers and Ground Doves were both engaged in love making this month. The pair of Shirikes in this grove, which had commenced their nest by January 31st, continued work upon it rapidly the first of this month, but when nearly finished the tree in which it was built was removed to another grove and their labor was lost. Waiting a few days they commenced again on the remains of one of their last year nests, and after completing it the female laid the first egg on the 23d. The complete set numbered four. The 15th I found a pair building in another orange grove the eggs were well advanced.

Ornithological Trip to St. Bruno, P. Q.

BY ERNEST D. WINTLE, MONTREAL.

On the 25th of May last, a friend and myself went for an ornithological ramble over the mountain at St. Bruno, about fifteen miles out of Montreal. The mountain is principally covered with small beech trees. The following birds were observed:

Robin, scarce.

Hermit Thrush, scarce. Found a nest containing four eggs incubated; bird on the nest was identified. It was well concealed in a grassy bank on the outskirts of a woody ridge. This bird was remarkably shy when I approached the nest, which I did several times. It would slip quickly off the nest and then keep out of sight until I hid myself, when it would return to the nest.

Chestnut-sided Warbler, scarce.

Golden-crowned Thrush, plentiful and their notes were heard from every part of the woods.

Redstart, plentiful, both males and females.

Summer Tanager. Saw one for a few seconds, when it disappeared most mysteriously, and I did not see it again.

Barn Swallow, scarce.

White-bellied Swallow, plentiful.

Red-eyed Vireo, plentiful.

Summer Warbler, scarce.

Catbird, scarce.

Goldfinch, plentiful.

Song Sparrow, plentiful.

Chipping Sparrow, scarce.

Rose-breasted Grosbeak. The mountain was fairly alive with these beautiful birds, and their merry jingling song resounded from the topmost branches of the beech trees. I only saw one female and shot six males.

Indigo Bird, scarce. Shot an adult male.

Bobolink, plentiful in the fields around the mountain.

Baltimore Oriole, scarce.

Crow, plentiful.

Tyrant Flycatcher, plentiful in the elm trees growing in the fields around the mountain. This species seem to prefer the vicinity of elms.

Great-crested Flycatcher. Saw two or three near a brook on the mountain. I have invariably found this bird near wooded streams.

Wood Pewee, scarce.

Chimney Swift, scarce.

Ruby-throated Hummingbird. Only saw one.

Ruffed Grouse. Flushed one.

Golden-winged Woodpecker. Only saw one.

Winter Notes from Raleigh, N. C.

BY C. S. BRIMLEY.

The occurrence of birds here this winter, not having been quite as usual, I thought a few notes on the subject might be of interest to some of the readers of the O. and O.

Robins occurred in the fall till November 19th, after which none were seen till January 13th, and from that time till now I have seen one or more every day or two; this is unusually early for them as I have never observed any before in January, and usually not till the middle of February.

I have also to note my first genuine winter records of the Brown Thrasher, one of which species was seen on December 17th and 18th, and another or the same one shot on January 2d.

On November 16th we secured a partial albino Golden-crown Kinglet, a most exquisite little creature; it was pure white, wings and crown as usual, but the former with more white, the tail also was whitish at base, eyes brown; it appeared to be in perfect health and there were no worms in the intestines.

The Pine Creeper and Yellow-rump, our two winter Warblers, have been about as common as usual, while as late as November 19th we secured an immature male specimen of the Black-throated Blue Warbler.

A Blue-headed Vireo on December 15th, was, however, about the latest of our migrants, and also a fresh addition to the number of our winter birds.

Of the numerous Sparrow tribe we have this winter taken a species hitherto unobserved by us, viz: the Savanna Sparrow, of which we have secured several specimens, but find it very rare here; Chipping Sparrows have been unusually scarce this winter and Field Sparrows very common. A single Pine Finch was taken on November 20th, the only reminder of the numbers that visited us last winter.

Of our three species of Nuthatch, the White-bellied, usually common in winter, has not been observed since November 14th, while I have taken six specimens of the Red-bellied species (four in November, one in December and one in January), and the Brown-headed Nuthatch has been quite as common as usual. The latter bird may often be seen in winter pecking at the pine cones and after working on one for some time he will fly off to a solid limb and apparently crack or hammer to pieces the seed or insects obtained from the cone. I have noticed one repeat this

manœuvre time after time, always flying to precisely the same spot to crack and eat its food.

Of Blackbirds, the Cowbird has been almost entirely absent this winter while a large flock of Redwings stayed until December 3d and then left; a small flock of seven Crow Blackbirds were seen on December 22d, and two more were seen on January 28th. Blackbirds are now (Feb. 13th,) beginning to come round again and will probably be nearly in full numbers by the end of the month.

Among Woodpeckers, the Pileated, Red-bellied and Red-headed have not been observed at all whilst the Sapsucker has been if anything, commoner than usual.

Doves have been unusually scarce this winter, which was also the case with Quail up to the end of December, but the latter bird has been quite as common as usual since then.

Crows have been commoner than usual, a flock of more than three hundred being observed on one day in December, and nearly as many on several other occasions. Jays have on the other hand been quite scarce.

A Great Blue Heron in breeding plumage, with developed crest and plumes, was killed near here on January 1st.

Of Ducks, quite a fair number of Redheads have been killed in the neighborhood of Raleigh and Mallard have latterly, been quite frequent in their occurrence; on one occasion, too, (Jan. 16th) a pair of Gadwall have been observed.

Both Snipe and Woodcock have been scarce this winter, while the Killdeer Plover was common until nearly the middle of January, but has, as usual, become quite scarce since then.

We have pretty well got through with the winter and are every day expecting Redwings, Robins and Grackles in force.

Notes from the Sea Islands.

BY WALTER HOXIE, FROGMORE, S. C.

Although this winter has been unprecedentedly cold, I have not observed any peculiar phenomena in regard to birds or their movements which could be traced to the weather. One Junco, the first received so far as I know in this locality, was my only northern straggler. Chipping and Field Sparrows were more common than usual, and Wilson's Snipe not quite so plenty. Pine Creeping Warblers have been unusually abundant. I estimated fifty in one tree. A companion who was with me at the time considers it a "good guess."

A word or two in regard to the Catbird may be of interest. Here is a brief summary of their

movements here for some time past as observed by myself and some of my friends. Between 1867 and 1883 only ten specimens were taken—the only ones observed. Fall of '83, fairly common. Once or twice observed during the winter. Spring of '84, very common. Fall of '84, very abundant—at one time outnumbering all other birds seen in a three miles walk. Many observed to winter. Spring of '85, common but not extremely so. Fall of '85, a very few seen early in the season, but none later on. Winter of '86 (up to date), very rare if at all. None taken, but one or two said to be seen. Perhaps some of your readers will offer an explanation of the peculiar invasion of this locality by the Catbirds. It is a phenomena unique in my observation and I can find no explanation at all for it.

During the early part of the winter I spent considerable time working up last year's notes and measurements, of which I give you some of the results below. My season's work was a little over seventeen hundred specimens, all carefully prepared, measured and dissected. The specimens were measured to sixteenths of an inch only, but in reducing to an average I have carried them out to hundredths. The dimensions are length, extent, wing and tail:

Summer Red Bird. ♂ 7.34, 11.96, 3.78, 2.77. ♀ 7.32, 11.59, 3.64, 2.82. There was a marked increase in the size of all specimens captured after May 1st. Also the fact that the female exceeds the male in length of tail is quite apparent throughout my list.

Loggerhead Shrike. ♂ 8.73, 12.22, 3.74, 3.84. ♀ 8.81, 12.06, 3.75, 3.90.

Bachman's Finch. ♂ 5.67, 7.56, 2.34, 2.50. ♀ 5.80, 7.75, 2.29, 2.38. This is the only species of which I yearly take more females than males—about two to one.

Cardinal. ♂ 8.20, 11.11, 3.48, 3.85. ♀ 8.69, 11.25, 3.50, 4.12. In this species the diversions are singularly uniform.

Orchard Oriole. ♂ 7.09, 10.10, 3.19, 2.77. ♀ 7.00, 9.81, 3.06, 2.75. By throwing out all young males the adults would average slightly larger.

Wilson's Plover. 7.89, 15.48, 4.60, 1.84. ♀ 8.01, 15.68, 4.64, 1.82. Only adults included in making up the average.

Yellow-crowned Night Heron. ♂ 23.42, 43.25, 11.39, 4.50. ♀ 23.62, 42.04, 11.03, 4.35. Great variation among individuals.

Louisiana Heron. ♂ 26.33, 37.62, 9.96, 3.54. ♀ 25.78, 35.67, 9.35, 3.35.

Great Blue Heron. ♂ 49.22, 74.25, 19.62, 7.50. ♀ 45.56, 72.00, 18.75, 7.31. All adults.

Little Blue Heron. ♂ 22.12, 36.85, 10.09, 3.97. ♀ 21.60, 36.95, 9.87, 3.77. Including young of the year which, however, seems not to affect the result in the least.

Royal Tern. ♂ 21.08, 45.40, 14.21, 7.35. ♀ 20.73, 46.58, 14.35, 6.85.

Winter Notes from Taunton, Mass.

J. C. CAHOON.

There has been a scarcity of birds about here this winter. With the exception of the present month (February) the weather has been quite mild. Yellow-rumped Warblers, Redpolls, Purple Finches generally winter here, but I have not seen any as yet. A few Nuthatches put in an appearance in November, but I have not seen them since. Goldfinches, Chickadees, Kinglets and Tree Sparrows are not as numerous as usual. A flock of Shore Larks have paid us a flying visit several times, but I have not seen or heard of any Pine Grosbeaks or Snow Buntings being seen. Several Great-horned Owls were seen and shot in January. Our local paper gives an account of a Snowy Owl being taken in the eastern part of the city.

December 14th, a ♂ Acadian Owl was shot at this place and brought to me to be mounted. Stomach filled with bones and feathers of small birds. The same man who shot this one brought me one last winter taken in this city.

December 18th, an adult ♀ Goshawk was brought to me that was shot about three miles from the center of the city. The hawk was shot in the act of killing a large hen. Stomach empty. The man who brought it to me said that he shot a specimen like the above several years ago in the same place.

December 24th I received a ♂ Great Northern Shrike; stomach completely filled with large white worms.

January 21st, I found a flock of six Song Sparrows around a brook near my house. Song Sparrows nearly always stop about this brook all winter.

February 1st four Cedar Waxwings were seen on a tree on one of the principal streets, but only remained a few moments. A flock was also seen on the outskirts of the city during the latter part of January.

MELANITIC PLUMAGE OF ROBIN.—I recently secured a Robin which showed decided traces of melanism, the feathers of the back possessing the ebony brilliancy of the Purple Grackle.—S. J. Leonard, Utica, N. Y.

ENTOMOLOGY.

WRIGHT & BATES,

73 Hanover St., Boston, Mass.,

ASSOCIATE EDITORS.

Address all communications for this department as above.

Book Notices.

The Butterflies of Maine; by Prof. C. H. Fernald; 8 vo., pp. 104, with 28 illustrations.

We desire to express our thanks to Prof. Fernald for a copy of this work. It was designed for the use of the students of the State College and for the farmers, but it is a very useful book to any entomologist. The descriptions are full enough to offer easy means of identification and at the same time sufficiently simple that any one would recognize them.

It mentions fifty-nine species as being found in Maine and gives a very useful artificial key for determining the species.

In our April number we noticed a work soon to be forthcoming, on the "Sphingidae of New England."*

This has since been received and is all that has been expected. It will take its place as one of the standard works of the country. The author gives a synoptical table which in itself is almost invaluable to the careful student. There are descriptions of forty-three species and varieties comprising twenty-two genera.

The book is illustrated by six full pages.

*The Sphingidae of New England; by Prof. C. H. Fernald of Orono, Me. 8 vo., pp. 85, illustrated with six full page plates.

Practical Entomology.

BY WRIGHT AND BATES, 73 HANOVER ST., BOSTON.

(Continued from page 60.)

DIPTERA.

PECULIARITIES: Two membranous wings, with irregular venation, the secondaries being reduced to two knobs or balances.

The mouth parts are formed for piercing and sucking. Transformations complete. Larva and pupa unlike the imago.

Localities where they are generally found: The *Culicidae* (mosquitoes and gnats) are most plentiful about wet lands, but sufficiently so anywhere.

The *Pipulidae* (crane flies) are to be found about decaying vegetable matter, as are also the *Mycetophilidae*.

The *Cecidomyiidae* (gall flies) are almost omnipresent and are very destructive to vegetable life.

The *Pulicidae* (fleas), *Hippoboscidae* (sheep-ticks) and the *Nycteribidae* (bat-ticks) are parasitic on the animal kingdom and are found upon their bodies and in their habitations.

The *Tobanidae* (horse flies) and the *Oestridae* (bot-flies) are generally most common about pastures and marshes, and flying about cattle.

The *Syrphidae* (plant lice feeders) are generally favorites with collectors on account of their bright colors; they hover about in the warm sunshine over the flowers and plants.

The *Muscidae* (house flies) are well known to all. They are most abundant about houses and stables.

This family, with but few exceptions, can be taken only in the warm weather, though some of their larvæ may be taken from under the bark of trees in the early spring. They may be captured by sweeping the grass in the fields and meadows, and with the net as they fly about over the flowers and about the fields. They are not very difficult to breed and raise, and many may be procured in this way.

CRITICISM ON "PRACTICAL ENTOMOLOGY."

[We have received the following letter, which explains itself, and cannot fail to attract the attention which it merits.—W. & B.]

"I think your papers on collecting and preserving insects are very good. There are one or two points I would offer suggestions on, and they are these:

"I have collected moths at sugar most carefully for the last fifteen years, have tried every bait, nostrum, and humbug mentioned in the entomological journals of this country and Europe and I have the *best* success with a poor quality of molasses, without beer or any other adulterant in it. Night after night I have used plain molasses and beer and molasses on a fence, alternating the materials, and the plain molasses was quite as attractive if not more so than any of the mixtures.

"I carry a plain lantern on my arm, without any screen and find that it works better than a bull's eye. The latter turns on the light so suddenly as to scare them.

"The large collectors and museums in all countries use only the flat presses so that when the insect is dry the wings are in a plane at right angles with the pin. The fact is that when insects are taken out of the press before they are thoroughly dry, their wings go up quite as frequently as down. It is a noteworthy fact that although nearly every book giving directions, advise the sloping press, as you have, there is scarcely an entomologist in this country who uses anything except the level presses.

C. H. FERNALD, Maine State College.

Sphingidae of New England.

VI. *S. ASTYLUS*.—*Drury*.

General color, reddish-brown or cinnamon color. Thorax with a ferruginous dorsal stripe, Tegulae tinged with rosy white in the female. Abdomen with a faint brownish dorsal line, and a yellowish stripe on each side.

Anterior wings, with a bluish stripe along the inner margin, above the middle of which the wing has a yellowish cast; there is a line of the same hue near the median nervule, joining it near the inner angle; in the subterminal space are two or three sub-terminal whitish bands, tinged with roseate; a tawny yellow spot at the tip, and also one at the inner angle. There are also three pale cross lines near the outer part of the costa.

Posterior wings tawny yellow, shading to a reddish-brown at the outer margin. Above the inner angle is a black ocellus with a blue pupil, and on the costa are two pale lilac lines.

Under side bright tawny yellow, with several whitish lines corresponding nearly to the markings on the upper side. The yellow spots show very faintly. Expanse $2\frac{1}{2}$ inches.

Larvæ: Prof. C. H. Fernald says "the larvæ is about two inches long, of a pale green color, variegated with dorsal and lateral yellow and red stripes and spots, somewhat like *myops*. The caudal horn is light brown at the base and tip, pale green in center."

Food plants: The rose family, swamp blueberry and perhaps the low huckleberry.

Spring Notes.

BY F. A. BATES, SO. BRAINTREE, MASS.

March 26, 1886. I saw to-day, for the first time this year, Vanessa Antiopa flying about in the high oak woods. I also saw Brepheos Infans, but was unable to capture the single specimen I saw, as he was apparently on a very urgent mission. This moth was near a grove of birches, upon which the larvæ of this species feeds. This is the earliest record of this insect, which I find in my field notes. In 1884, the first was seen April 13th. In 1885, the first was April 19th.

The prospects for a good season for collecting does not now look very promising. Very few pupæ are to be found, and many of them are apparently dead.

I desire to call the attention of collectors to four members of the Lyesnidae, known to many under the name of Polyommatus or Cyaniris, viz: *L. pseudargiolus*, *Bd.*; *L. Violacea*, *Edw.*; *L. Neglecta*, *Edw.*; *L. Lucia*, *Kirby*, and to request

them to send me notes of the dates and circumstances of the capture of these four species. I append descriptions.

1. *L. PSEUDARGIOLUS*, *Bd.* Upper side of wings, deep azure blue. Fringes, black on the apical portion of the anteriors, and white, barred with black on the remainder of the wings. Under side, pale silvery-gray, marked with pale brown, as follows: A row of spots along the outer margin, each preceded by a crescent; a curved row of elongated spots across the anteriors between the discal cell and the outer border; also a few small spots at the base of the hind wing.

2. *L. LUCIA*, *Kirby*. This form has the upper side the same as the last, but the terminal spots on the under side are so enlarged and run together as to form a terminal band, and the spots on the basal portion of the posteriors are increased and so run together as to form a more or less complete discal patch; the color of the under side is also darker than in the last mentioned.

3. *L. VIOLACEA*, *Edw.* This form is like all of this little group, azure blue; it has on its under side the dark points on the disk of the posteriors, and pale dusky spots and crescents on the margin, but they are not run together as in *lucia*.

4. *NEGLECTA*, *Edw.* This form has the upper side of the posteriors paler than the anteriors; the under side is also paler and the markings are not so distinct as in *violacea*, although very similar.

I find that there is still another form, called *L. marginata*, which I have never seen, which has the marginal band on the under side of the posteriors as in the form *lucia*, but has the disk as in *violacea*.

The larvæ of this group live on the ground nut, spirea, red-root, cornel and holly.

On May 2, 1883, I took *L. lucia* in a grove of hard wood trees.

The next year, 1884, my first capture was April 23d, in the same locality.

May 3d was the first date in 1885.

The form *lucia* was in all cases the first taken, the others following after in a period of from three to six weeks, *pseudargiolus* appearing second and *violacea* third, but so nearly together were the last two that they may have reversed the order.

I would be pleased to hear from collectors as to these forms.

ERRATA.

Page 14, second column, 15th line from the bottom, for grass read frass.

Page 15, first column, 15th line from the bottom, for finely read firmly.

RECENT PUBLICATIONS.

AMERICAN ORNITHOLOGISTS' UNION CODE OF NOMENCLATURE AND CHECK LIST OF N. A. BIRDS.

The American Ornithologists Union have published their Code of Nomenclature and Check List of North American Birds in the form of a handsomely bound volume of 392 octavo pages. The work is divided into two parts; a code of nomenclature, and a classified list of birds. In part I the committee give their definition of the general principles underlying zoological nomenclature, and their theory as to the application of them, also recommendations for future compilers of names and lists.

The committee have very evidently striven to properly and systematically derive the nomenclature from duly accredited sources, and the few individual expressions are in seeming conformity with the general endeavor.

Part II is a classified list of the Birds of North America; a "Hypothetical List" being a list of the birds whose right to be recognized as a distinct species can not be established. Also a List of the Fossil Birds discovered up to the present time.

The change in arrangement is very great, the birds which have hitherto been considered as belonging to the highest scale in the order of bird life, and therefore having a right to precedence, are placed at the foot of the list, and the family of Grebes are placed at the head. Such an arrangement is hardly justifiable. The scientific nomenclature has also been very much altered; some long recognized names having been discarded for others no more suitable, and which in some few instances even lack the right of precedence, in either the date or derivation. In fact if this "List" renders the true version of classified nomenclature, our ornithologists have groped long in the darkness of unsystematic lists. As the "check list" is the most desired portion of the book among ornithologists and oölogists, the committee should publish Part II in a cheap form for their use as many cannot afford to purchase the complete work. The typographical features of the book are excellent, as is usual with the productions of the "University Press," and the book is, on the whole, a very creditable work.—*F. H. C.*

MEMOIRS OF THE NUTTALL ORNITHOLOGICAL CLUB.

The Nuttall Ornithological Club have begun "to issue a series of memoirs, irregularly as material offers." No. 1, issued in March, is an exhaustive treatise on the migration of birds, and the personal experiences of the author at Point Lepreaux, Bay of Fundy. The above papers were written by Wm. Brewster, and bear the evidence of original research and method. Several theories on migration are given which should be proved by a closer observation than hitherto. Judging from this number the future publications of the club will stand among the first of Ornithological productions in the field of literature.—*F. H. C.*

CORRESPONDENCE.

An Inconsistent Journal.

EDITOR ORNITHOLOGIST AND OÖLOGIST:—Sir: Allow me to quote from *Forest and Stream*, issue of January 28, 1886, page 5: "He heartily agreed with the president (E. A. Samuels) in his condemnation of the insectivorous and song birds, and strongly urged efforts to destroy the interests of taxidermists, by whom so many birds were killed simply to furnish female adornments."—*Commissioner Lathrop*. "The business of every taxidermist in Massachusetts should be killed primarily."—*Hon. E. A. Brackett*.

The publication of an article in *O. and O.*, by request, taken from the *F. and S.*, I think should be supplemented by the above. Let any one who does not know the *F. and S.* take a number, say March 18th, look it through carefully; one third of its advertising space is devoted to the enticing holding out of all imaginable implements of destruction to bird life. A large part of its reading matter consists of exciting stories of slaughter, points to sportsmen, discussion of the most sportsmanly manner of *principled* amateurs. In fact everything to convert a reader into a working member of the craft, and in it we find snuggled the dear little "Audubon Society" and the A. O. U.

Now please spare us from shots from that craft. The compartments may not buoy all up. Perhaps some of us who are as good friends to the feathered tribe as members of the A. O. U. will be compelled to oppose it, if the disposition is not plainly shown to consider the rights of those out of the circle.

PREVENTION BETTER THAN CURE.—Editor *O. and O.*, Sir: A new substance is just now coming into use by naturalists which promises well as a preventive of insect ravages in collections. It is Naphthaline. It is the active ingredient in "Disinfecting Cones" which are being made for entomologists' use, and is said to be very effective in preserving collections intact. It has the odor of coal tar, but consists of handsome scaly, pure white crystals which may be scattered under the cotton with the birds or eggs. Mixed with dry arsenic, and used on skins, it might form a valuable adjunct, as from its position it would evaporate very slowly and might last for years. Certainly if all, or nearly all, the statements are true which are made about it, Naphthaline will prove the greatest boon which the naturalist has received for some time.—*W. E. Saunders, London, Ontario*

Editor of *O. and O.*, Dear Sir.—Glad to see articles on Entomology. I think that the Ornithologist who cannot apply Entomology and Botany as he goes along is losing much, both in his own pleasure and in usefulness to the world at large.—*Walter Hoxie*.

MR. THOMPSON WHEAT OF MACOMB, ILL., writes that while watching some Blue Jays recently, he noticed one of the birds fly to the ground, and picking up a grain of corn return and give it to a companion. As such affectionate actions are not the usual traits of the Jay, he very pertinently asks if anyone has observed a similar instance.

F. B. SPAULDING, LANCASTER, N. H., reports Robins as numerous in his vicinity during the past winter, something very unusual, as they generally depart in November and do not appear again until the following March.

GEO. G. CANTWELL, MINNEAPOLIS, MINN., reports securing on March 5th, several specimens of the Horned Lark, and on the following day three Chestnut-collared Longspurs were taken.

ELMER T. JUDD, BETHEL, CONN. writes of finding a nest of the Rose-breasted Grosbeak containing five eggs, and says it is his first instance of finding so many in one nest. He asks if it is common to find as many?

CORRECTION. Mr. E. C. Erdis writes us that the statement which appeared in his article in the January issue, regarding the Worm-eating Warbler being seen in winter, was a mistake. He had the record of another bird in mind when he wrote the article. The original communication was received before the *O. and O.* came into the charge of the present editor and escaped observation until it appeared in print.

Correspondents should bear in mind that all communications for publication should be sent to the Editors.

JUNE, 1886.

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No. 6.

A List of Birds Observed at Pensacola, Florida.

BY BARTON W. EVERMANN.

It was my good fortune to spend the time from March 18th to April 13th, of the present year, in and about Pensacola, Florida. While the chief object was to make collections of the fishes of that region, I nevertheless kept notes of the various species of birds which came under my notice. In the present list I have included only those species which were definitely identified by myself or by Mr. Charles H. Bollman, who assisted me in making collections at that place. A number of other species reported as resident, or usually common, I do not include in the list. Pensacola is located in West Florida, on a most beautiful bay. The country round about is low and level, often covered with titi or cypress swamps; the soil is sandy, the vegetation consists usually of an undergrowth of scrub oak, palmetto palm, etc., and a larger growth of pine, live oak, bay, cypress, etc. Most of the land birds, particularly the warblers, recorded in this paper were observed on a small peninsula, called Tchina Point, about two miles east of Pensacola and between the Bay and Bayou Texas. Santa Rosa Island and the coast west of Pensacola, near the U. S. Navy Yard, were also good places for making observations. The time from March 30th to April 10th, was spent on the schooner Niantic, on a fishing cruise to the "Snapper Banks," out in the Gulf 225 miles southeast of Pensacola. Of course, few birds were seen on this trip, except two days (April 6th and 7th,) which we spent in the harbor of Saint Joseph, 100 miles east of Pensacola. We were driven into the place by a storm, and, while there I was permitted to go on shore at Saint Joseph Point. During these two days bird life was very abundant on this small peninsula, the pine and oak woods literally swarming with great troops of various species of migrants, the most conspicuous among them being Orchard Orioles, Summer Redbirds, Card-

inals, Hooded Warblers, Yellow-rumps, Kingbirds, etc. It was with great satisfaction that I was able to see here in the groves of this "Land of Flowers," those vast hosts of beautiful brightly-colored birds which go trooping through our northern woods a month later and which I had so often seen in the forests and along the streams of Indiana. Several species which in the north have but little tendency to flock were noticed here to be travelling in considerable bands. The most noticeable among these were Summer Redbird, Kingbird and Hooded Warbler. A prettier sight than these presented as they hurried from tree to tree in this semi-tropical forest, has but rarely been witnessed by me.

While I was on and about the water a great deal, yet my observations of water birds were not very satisfactory. Only occasional opportunities for collecting them occurred, and I did not always have a gun at hand when such chances offered. I thus am unable to include in the list some species of Gulls and Terns which I saw at some distance but was not able to identify with certainty.

The arrangement and nomenclature of this list are those of the "A. O. U. Code and Check List of N. A. Birds," but recently issued. The number in parenthesis after each name is that of the A. O. U. List.

1. *Urinator imber*, Gunn. (7). Loon. Quite common in the bay until the first of April. As many as nine were seen at one time near the mouth of Laguna Grande, a few miles from Pensacola. One was seen out in the Gulf, 100 miles from shore.

2. *Larus argentatus smithsonianus*, Coues. (51a). American Herring Gull. Common in the bay at Pensacola; abundant at Saint Joseph's, where it was seen April 6th and 7th.

3. *Larus delawarensis*, Ord. (54). Ring-billed Gull. Perhaps the most common Gull both at Pensacola and Saint Joseph's.

4. *Larus philadelphia*, Ord. (60). Bonaparte's Gull. Rather common in Pensacola harbor and

Saint Joseph's. The number of each species of Gull seemed as great April 12th, when I left the state, as when I first went there, March 18th.

5. *Sterna hirundo*, Linn. (70). Common Tern. Several seen at Saint Joseph's, but none at Pensacola.

6. *Sterna antillarum*, Less. (74). Least Tern. On April 5th I saw a number of this species off Saint Joseph's. The fishermen tell me it breeds on a small island near the head of St. Joseph's Bay, also on the Hurricane Island at St. Andrews, between Saint Joseph's and Pensacola.

7. *Hydrochelidon nigra surinamensis*, Gmel. (77). Black Tern. A few seen in St. Joseph's harbor.

8. *Rynchops nigra*, Linn. (80). Black Skimmer. Six seen in Pensacola Bay March 28th, by Mr. Bollman.

9. *Phalacrocorax dilophus floridanus*, Aud. (120a). Florida Cormorant. One seen at Pensacola, several at Saint Joseph's.

10. *Pelicanus fuscus*, Linn. (126). Brown Pelican. On April 5th I saw a pair fly over our smack just off Saint Joseph's harbor.

11. *Tophodytes cucullatus*, Linn. (131). Hooded Merganser. A small flock of six or eight were seen in the Laguna Grande.

12. *Anas carolinensis*, Gmelin. Green-winged Teal. Rather common in the Grand Lagoon, where it was seen in flocks of five to forty at different times.

13. *Aix sponsa*, Linn. (144). Wood Duck. A pair seen in Perdido Bay, nine miles from Pensacola.

14. *Charitonetta albeola*, Linn. (153). Bufflehead. A few seen at various times and places about Pensacola.

15. *Histrionicus histrionicus*, Linn. (155). Harlequin Duck. A single specimen seen near the wharf at Pensacola, March 20th.

Guara alba, Linn. (184). White Ibis. A flock of about twenty was seen flying westward along the coast on the morning of March 19th, and a few more were seen on Santa Rosa Island, March 25th.

17. *Ardea herodias*, Linn. (194). Great Blue Heron. Single individuals seen occasionally at different places along the coast.

18. *Ardea egretta*, Gmelin. (196). American Egrett. Only a few seen at Santa Rosa Island.

19. *Ardea candidissima*, Gmelin. (197). Snowy Heron. Two seen on one or two occasions.

20. *Ardea herodias*, Linn. (200). Little Blue Heron. Seen twice; once on Santa Rosa Island and once at Saint Joseph's.

21. *Ardea virescens*, Linn. (201). Green Heron. Not common. Only a few seen.

22. *Fulica americana*, Gmel. (221). American Coot. Rare; only two or three seen.

23. *Macrorhamphus griseus*, Gmel. (231). Dowitcher. One specimen secured on the beach at Laguna Grande.

24. *Totanus melanoleucus*, Gmel. (254). Greater Yellow-legs. Only one specimen seen, which was shot at Laguna Grande.

25. *Aegialitis vocifera*, Linn. (273). Killdeer. Rare; only two specimens seen.

26. *Aegialitis meloda*, Ord. (277). Piping Plover. A few seen at Pensacola, more at Saint Joseph's.

27. *Zenaidura macroura*, Linn. (316). Mourning Dove. Not very common, but usually seen at all places visited about Pensacola.

28. *Cathartes aura*, Linn. (325). Turkey Buzzard. Occasionally seen along the shore.

29. *Catharista atrata*, Bartr. (326). Black Vulture. Not seen in the immediate vicinity of Pensacola, but a few miles inland it was noticed to be quite common.

30. *Accipiter cooperi*, Bonap. (333). Cooper's Hawk. Rare; seen once or twice only.

31. *Buteo borealis*, Gmel. (336). Red-tailed Hawk. One seen at Saint Joseph's.

32. *Buteo latissimus*, Wils. (343). Broad-winged Hawk. One seen near Pensacola.

33. *Haliaeetus leucocephalus*, Linn. (352). Bald Eagle. Seen occasionally at Pensacola, also at Saint Joseph's. The fishermen told me that they climbed to a nest on Saint Joseph peninsula early in March and found that it contained three young.

34. *Pandion haliaetus carolinensis*, (Gmel. (364). American Osprey. Two pairs were noticed at Pensacola and three or four pairs at Saint Joseph's.

35. *Bubo virginianus*, Gmel. (375). Great Horned Owl. One specimen was seen on the peninsula at Saint Joseph's.

36. *Ceryle alcyon*, Linn. (390). Belted Kingfisher. Seen occasionally at various places along shore.

37. *Dryobates pubescens*, (Linn. (394). Downy Woodpecker. Seen once among the pines at Perdido.

38. *Sphyrapicus varius*, Linn. (402). Yellow-bellied Woodpecker. One seen near Pensacola on April 11th.

39. *Melanerpes carolinus*, Linn. (409). Red-bellied Woodpecker. Seen occasionally in the pine woods.

40. *Colaptes auratus*, Linn. (412). Flicker. Rather common in the open pine woods.

41. *Antrostomus vociferus*, Wils. (417). Whip-poor-will. One specimen seen at Telina Point, March 19th.

42. *Chordeiles virginianus*, Gmel. (420). Night-hawk. No Nighthawks were seen until the evening of April 10th, when one was noticed. Next evening several were seen flying about the streets.

43. *Chætura pelagica*, Linn. (423). Chimney Swift. First ones observed on morning of March 24th. By the 26th they had become common.

44. *Trochilus colubris*, Linn. (428). Ruby-throated Hummingbird. Hummingbirds were seen the first day we were at Pensacola and continued to be met with during our entire stay.

45. *Tyrannus tyrannus*, Linn. (454). Kingbird. First one seen on Santa Rosa Island March 25th, but others were not met with, except at Saint Joseph's April 6th and 7th, where they were very abundant.

46. *Myiarchus crinitus*, Linn. (452). Crested Flycatcher. One was here among the oaks at Tchina Point.

47. *Sayornis phæbe*, Lath. (456). Phæbe. One seen by Mr. Bollman at Tchina Point, March 56th.

48. *Cyanocitta cristata*, Linn. (477). Blue Jay. Quite common, even among the trees along the streets of the city. None of variety *florincola* were noticed.

49. *Corvus americanus*, Aud. (488). American Crow. Frequent, especially inland.

50. *Corvus ossifragus*, Wils. (490). Fish Crow. Common about the wharves, where it feeds upon refuse matter lying about or floating in the bay. Mr. Silas Stearns informs me that *C. americanus floridanus* is also common there, but I was not able to secure specimens.

41. *Agelaius phœniceus*, Linn. (498). Red-winged Blackbird. A few were seen on the point near the ruins of Fort McRea, others on Santa Rosa Island, and others in greater numbers at Saint Joseph's.

52. *Sturnella magna*, (Linn. (501). Meadow Lark. A single individual was seen near Fort McRea on March 22d, and another between Pensacola and Mill View or Perdido, nine miles west. None were seen at Saint Joseph's.

53. *Icterus spurius*, Linn. (506). Orchard Oriole. A male in full plumage was seen March 23d, in a garden near "Uncle Aaron's," between Pensacola and the Navy Yard. None others were noticed until April 5th and 6th, when they were found in great numbers on the peninsula at Saint Joseph's. This peninsula is about fifteen miles long, extending westward from Cape San Blas between the Gulf and Saint Joseph Bay. It is widest near the Cape, but at the west end it grows rapidly narrower and at the outlet of the bay terminates in a low wooded point bearing the same name as the bay. The birds were evi-

dently migrating while we were here and their route of travel lay along the coast line which they would follow westward, I infer, until some large river is reached, when they turn northward. Thus I suspect, along this part of the Gulf coast, the lines of westward travel are deflected northward and in their true direction, at the Apalachicola, Chactawhatchie, Connecuh, Escambia and Alabama, each of these rivers receiving its share of the great wave of bird life which in each returning spring spreads from the tropics toward the pole. As the limits of the area over which the migrating birds could spread on this peninsula at Saint Joseph's grew narrow and more narrow as they passed toward its western terminus, there the groves were literally alive with bird life; great flocks of many species were trooping through the woods, presenting such a scene of life and activity as one seldom sees among our native birds. Among the most conspicuous of the bright-colored species were the Orchard Orioles, —females and males in the different plumages of different ages, were all here mixed with other bright-colored species. Upon my return to Pensacola, April 10th, this Oriole was rather common, especially about the city.

54. *Icterus galbula*, Linn. (507). Baltimore Oriole. I did not detect the presence of the Baltimore Oriole at any point visited by us until my return on April 10th, to Pensacola, where an occasional male was seen or heard among the oaks or sycamores which line certain streets of that city.

55. *Quiscalus quiscula*, Linn. (511). Purple Grackle. A few seen about Pensacola, but none seen elsewhere.

56. *Quiscalus major*, Vieill. (513). Boat-tailed Grackle. A few were seen at Pensacola, but at Saint Joseph's they were common about the small ponas or lagoons on the peninsula.

57. *Pooecetes gramineus*, Gmel. (540). Vesper Sparrow. Rare; two or three were seen near Fort McRea.

58. *Spizella socialis*, Wils. (560). Chipping Sparrow. Rather common about Pensacola, especially in the more open pine woods in the vicinity.

59. *Melospiza fasciata*, Gmel. (581). Song Sparrow. Not common; seen only rarely.

60. *Melospiza georgiana*, Lath. Swamp Sparrow. Seen occasionally. One specimen obtained near Perdido.

61. *Pipilo erythrophthalmus*, Linn. (587). Towhee. Rather common everywhere—especially on Santa Rosa Island, Tchina Point and Saint Joseph's.

(To be concluded.)

Notes on Aptoso-Chromatism.

BY WALTER HOXIE, FROGMORE, S. C.

I have had several interesting letters since the appearance of my article in the April O. and O., and as perhaps more of its readers may feel at least a curiosity to know something more of my method of studying Aptoso-chromatism I subjoin the notes taken to-day on those of yesterday's specimens.

Sanderling ♂, 1928, 4-23. Moults nearly complete. No signs of breeding plumage except a few feathers on the upper parts. Breast and neck pure white. Testes minute.

Dunlin ♂, 1929, 4-23. Moults less than one-third complete. Breeding plumage very evident, especially on the breast. On the throat and neck the old feathers show wider and darker middles than in winter plumage. The new and pin feathers black and white about equally divided among all feathers. The black ones with white tips. Testes beginning to swell.

Dunlin ♀, 1930, 4-23. Moults about same as 1929. Breeding plumage $\frac{1}{2}$ -1929. On throat nearly 1929. The black on breast restricted to small areas on the middle of each perfect new feather. Pin feathers white. Ova minute. None appear in the least swollen.

The Yellow Rail.

BY C. H. WILDER, BRISTOL, N. Y.

This species seem to elude observation pretty successfully. Two or three notes may be of interest. Notes from Central N. Y., on this species may be found as follows: Rathbun's *Birds of Central New York* says: "Very rare. One taken September 20th, 1872.—Gilbert." *The Oölogist*, vol. IV, No. 5, p. 40, records a capture in central New York. A third was taken at the foot of Canandaigua Lake, Oct. 6, 1883. This specimen is recorded in the *Young Oölogist*, vol. II, No. 2, p. 47. The skin was in my collection for nearly a year, until destroyed by accident.

Occurrence of the Brown Thrush in Winter in Rhode Island.

Mr. W. J. Wheelock of Johnston, R. I., secured in that town on Jan. 30, 1886, a specimen of the Brown Thrush (*Harporhynchus rufus*). We have in our possession a skin of the same species, purchased of Southwick & Jencks, which was said to have been taken at Pawtucket, R. I., in February, 1882.

OÖLOGY.

J. PARKER NORRIS, Editor.

The Editor assumes no responsibility for those articles which have the names of the writer attached.

Owl versus Hawk.

BY J. M. W., NORWICH, CONN.

At this season the field oölogist will associate certain points of resemblance and difference in the breeding habits of our four large local *Rapacivæ*. Briefly grouped, they are as follows: He will note that they all prefer an old tenement. The crow is their architect whose ground plan obtains, and the grey squirrel the *pro tem.*, tenant whose fixtures revert to the estate. The Great Horned Owl breeds earlier than the Barred, is shyer and more formidable, and lays but two eggs. The Red-tailed Hawk breeds earlier than the Red-shouldered, is more retiring and fiercer, and commonly lays two eggs. Our nebulous owl usually lays three eggs, often but two, and sometimes four. *Buteo lineatus* usually lays three eggs, often but two and occasionally four. It is presumed that the Barred and Red-shouldered which lay two eggs are old birds, and those which have trios and now and then break into fours are young adults. At any rate it will constantly be found that when individuals of either sort lay two or three in one year, successive years will also bring pairs and trios. I took two five years in succession from one Red-shouldered Hawk, and from one old Barred Owl six years in succession got only pairs. Her clutch is always two, in fact. Yet the fact remains that trios are typical sets of mature birds of these two species. But again; in Sandy Hollow, Ledyard, three years running I took sets of four from a Red-shouldered and the fourth year got four fledged young. In '82, '83 and '84 I took but trios and pairs from my large Red-shouldered contingency, but in 1885 four quartette clutches came early to the front. And this year the season opened with two sets of four Barred Owl's eggs. This is the apparent system, and these the changes that surprise and enchant us in our spring field work.

When the angry Red-tails find Mrs. Bubo in their old home I fancy they would not often dispossess the tenant but for the noisy help of the crows, always "spoiling" for this kind of a free fight. April 3d, 1886, I took a clutch of one Barred Owl and three Red-shouldered Hawks, and three years ago I took a similar clutch. In the first place the aggressive hawks were aided

by such a contingent of crows that the poor owl's life became a burden to her and she was forced to seek a quieter neighborhood. These avian troubles were in open nests. But when *Bubo* and *Syrnium* breed in cavities they can "hold the fort," for no self-respecting *Buteo* will ever crawl into a hole.

Nesting of the Golden Eagle.

BY J. R. C., SAN BENITO CO., CALIFORNIA.

On February 15th, 1886, I went to an old nest of the Golden Eagle, (*Aquila chrysaetus canadensis*), and found that the birds had begun to fit it up with new material. On February 26th I made another trip to the nest, and found two eggs.

The nest was in a solitary live oak tree, surrounded by wheat fields; and the tree had only been left standing because it grew on the side of a gulch. The birds had built on the south side of the tree, and the nest was composed of large sticks, one of which measured seven inches in circumference. It was lined inside with straw stubble, green grass, and green twigs of trees with the leaves attached. It was six feet deep and five feet broad, and was built up nearly four feet from the bottom. It was just thirty-one feet from the ground, as I ascertained by means of a string.

Both the eggs were perfectly fresh, and after preparing them I cooked the contents of one of them, as I wished to ascertain how Eagle's eggs tasted. I found it rather rank, however, and only fit for starvation diet.

When I approached the nest I saw no bird, but while I was under the nest the Eagle flew up and lit on the nest over my head. I waited until she flew off again, which she did (with a scream) in thirty-four minutes, and I think she deposited the second egg while I waited, for she did not see me, and I never saw her again after she left the nest.

[The set of two eggs, above referred to, are at present in the cabinet of a gentleman in Philadelphia, where they have been examined by the present writer. They are very handsomely marked specimens and quite spherical in form. No. 1 measures 2.86x2.21, and is of a whitish color, quite heavily marked all over the egg with spots and blotches of bright reddish brown. These become confluent near the smaller end, where they are very heavy, and form an indistinct circle. There is also a large blotch of reddish brown near the larger end, and the shell is quite rough. No. 2 measures 2.89x2.29, thus being slightly larger than the other egg. The ground color is whitish, and is marked all over with small spots of bright reddish brown, which are thickest near the

smaller end, but not confluent as in No. 1. The larger end is covered with light lilac markings, and the shell is rough, and slightly granulated. —Ed.]

Notes on the Nesting of the Great Horned Owl.

(*Bubo virginianus*.)

BY THOMAS H. JACKSON, WEST CHESTER, PA.

Within a few years this bird has become a rather scarce resident of this section of Eastern Pennsylvania. The destruction or thinning out of the larger tracts of timber, together with the increasing demand of this fine bird for the taxidermists' art, have left but few pairs to breed in the vicinity. In a recent number of THE ORNITHOLOGIST AND OÖLOGIST I notice that a writer takes exception to the large number of eggs usually accredited in sets of the *Raptores*. In his experience with those of the Great Horned Owl I fully coincide. In thirteen nests of the bird that have come under personal notice, twelve contained two eggs or young, and only one contained three eggs.

Upon one occasion I replaced the Owl's eggs taken from a nest with those of the common hen, and upon visiting them at the expiration of three weeks, found that both the latter had hatched and had fallen from the nest, about twenty feet from the ground, and that the owls had deserted the locality.

All the nests referred to above were placed in branches of trees, and were generally those of Crows or Hawks renovated or enlarged. Occasionally a hollow tree is used for this purpose.

The Great Horned Owls are liberal providers for their young. I have frequently found full grown rabbits lying in the nest beside the young, and scarcely a nest visited did not have a strong odor of the skunk, while bones and feathers were scattered around, attesting to the predaceous habits of the proprietors.

The hooting of this owl in the lonesome recesses of the forest is not an attractive sound to the belated traveler who knows not the source whence it comes, but I have often listened with pleasure to their solemn signals as they answered each other from different points in the silent forest. The notes of the sexes are quite different. One of them (I cannot say which) utters deep deliberate hootings, while the other answers in short quick tones very easily distinguished, and as I have always heard these notes in the vicinity of a nesting place, I have taken it for granted that they are distinguishing traits in the sexes.

Nest of the Red-bellied Nuthatch.

BY WILLIAM L. KELLS, ONTARIO, CANADA.

As many persons have requested me to try and obtain for them the eggs of this species, (*Sitta canadensis*), and as it seems that but little is known of its nidification, or indeed of its general habits, I think that perhaps a short sketch of what I know on the subject may be interesting to many. In Peel, the home of my early days, where I first began to study, from the unwritten book of nature, the pleasing science of ornithology, this bird was unknown to me; though the White-bellied species, (*Sitta carolinensis*), was common, and often came under my observation. Especially was this the case at the time of sugar-making, and at these times I had often noticed the latter variety nesting. The nature of the woods on the Peel lands was no doubt the cause of the absence of this species from that section, hard wood being the principal timber here, while as I now know the soft evergreen woods are the peculiar haunts and homes of the Red-bellied Nuthatch. When, however, I came to reside in North Wallace, I was struck with the peculiar appearance of the Nuthatches that I saw in the evergreen woods there when compared with those I had previously seen, and still occasionally observed among the hard wood timber, but the idea that they might be a different species did not yet occur to me, and not until some years afterwards, when I obtained Ross' *Birds of Canada* did I become aware that there existed two species of these birds in the woods of Canada; for my previous text book, Cuvier's *Animal Kingdom*, gave me no information on the subject.

Having, however, obtained this information, I identified the species at once, and knew much of their distinguishing habits and peculiar haunts. But previous to this, in the month of June of my second year's residence in Wallace, as I was cutting down some timber on the margin of a beaver-meadow that intersected my farm, and where the bush was composed chiefly of linden, black-ash and several kinds of evergreens, my attention was attracted by the action of a pair of Nuthatches whose color and notes I observed differed from those of another pair whose nesting place I had disturbed in the sugar-bush on the other side of the meadow earlier in the season. These birds were continually going in and coming out of a Woodpecker-like hole in the top of an old linden stub about twenty feet from the ground, evidently feeding young, and during the day the branches of one of the trees that I was felling struck this and brought it to the earth. Upon examination

I found, to my regret, and the great distress of the parent birds, that the cavity in the old tree had contained the nest and three young of the Nuthatch, which were about a week old, but fatally injured by the fall of their birthplace. The cavity in which this nest was placed was like that of a small Woodpecker's, and the nest itself, (like that of a Blackbird) was composed chiefly of fine strips of fibrous bark. I have long felt certain that it belonged to and was a type of the nest of the Red-bellied Nuthatch. Of late years I have rambled through wet log strewn, brush-entangled, swampy woods where these birds make their homes, but no sight of their nesting places has since rewarded my toil, though they are quite common here in winter, and often in mid-summer their pleasant notes fall on the listening ear, from the balsams, or high up among the pine tree tops. Mr. Allen, a gentleman of Toronto, writing in *The Ontario Farmer* in 1869, on the subject of ornithology, remarked regarding this species: "The nest of this Nuthatch is generally made at the bottom of (a cavity in) some dead stump at no great height from the ground. The eggs, four in number, are small, white, with a deep blush, and sprinkled with reddish dots." It seems, however, that the general nesting habits of this species are as yet but little known, and much interest and curiosity must exist in the minds of ornithologists until more is understood about them.

Nesting of the Rufous Hummingbird in California.

BY W. OTTO EMERSON, HAYWARDS, CALIFORNIA.

While out looking at a Western Red-tail's nest, at an old sandstone quarry, in a cañon some four miles from Haywards, on March 7th, 1886, I heard the buzzing of a Hummer near me. I took a moss-covered seat on the rocks, and soon saw a Rufous Hummingbird, (*Selasphorus rufus*), fly out from a mass of wild blackberries that hung down over the rocks and formed a cool, sheltered bower under the overhanging vines and rocks. On stepping up to the place, the female flew into the vines, hovered here and there, rather than on what seemed to be a bit of green moss about as large as a walnut, which was placed on a slender vine. On getting up on a large mass of rocks, just below the level of the nest, I could look upon her; she flew off down to a creek.

I could see two pinkish fresh eggs as they lay on their bed of white willow cotton, while standing there contemplating as to whether I had best take them or not, my eye caught sight of another bit of green moss, just on a level with the other

one, and three feet to the left of it. Said I to myself, here is a last year's nest, and the thought came to me, do not some of our feathered friends return to their old nesting places year after year? This seemed to be evidence of it, and when I took the two nests off the vines, why may there not be more evidence of their return to "Rufous' Bower"? As I looked about through the vines, sure enough up to the right, a little higher, and four feet or more, could be seen a rather flattened ball of moss not looking much like a nest. It was on a dead vine, and after a long reach and stretching I had the third nest in my hands.

I think now I have the proof before me, in these three nests, of at least the hummers returning to the same place to breed year after year, when not disturbed by small boys and wild animals. This being a quiet nook, free from noise and nest robbers, they came again and again to bring up their young. I will try to give some idea of these nests as they lay before me. No. 1, with the fresh eggs, was placed at the intersection of a dead and a live vine, about seven feet from the ground and about four feet from where I stood, in front of the nest on the rocks. It is composed wholly of willow cotton on the inside; outside green moss evenly put on, and well fastened with spider webs. The usual gray lichens are put here and there over the sides, though not so much as on the Anna's Hummingbirds' nests, and if anything, more than on the Allen's Hummingbirds' nests.

A question here arises: Why do all birds that use lichens to adorn their nest put the gray side outwards instead of the dark side, unless to protect their home from being found and destroyed by men and animals? The nest with plenty of gray color makes it look more like the limb it may be on. We see in the nest of the Blue-gray Gnatcatcher covered over completely by lichens, that it is almost impossible to recognize it until the bird is near it, or before one's eyes. Some the Creepers, or "Honey Eaters" of Australia, are experts at making their nests so nearly like the gum tree limbs that they are on, by placing the fine threads of the bark up and down the nest, so naturalists have told me, who have hunted for them, they found it next to impossible to see them, even though the hand may be directly over it. The Allwise has given to all his creatures some means of protection of their own, the weaker from the stronger.

I find a nest of the Blue-gray Gnatcatcher, lately received from London, Canada, is so well covered with lichens, even running over the edge into the nest, that not a space of the nest proper shows. All are put on with the light gray side showing outwards. The Wood Pewees' nests, though not

so well covered, are the same. Some of the nests of the western species that I have seen are more so than its eastern brother. Even the Yellow-throated Vireo uses a great deal of the lichens to adorn its nest. One that I have before me now is as beautiful a piece of bird architecture as I have ever seen. A great many large pieces of lichens are worked in through the nest, with empty cocoons of insects.

Now to go back to "Rufous." I have described nest No. 1. No. 2 was placed on a single vine at a fork where the leaf stem branched out. It was about four feet from No. 1, and the same distance from the ground. No. 2 was much shrunk and dry, only being two-thirds as large as the fresh nest. It shows only a bunch or ball of dry green moss and a few dead brown lichens on it.

No. 3 was placed in the same position on a vine as No. 2; it is more flat in character. The moss had grown over the top, giving no idea of a nest, but the general mass, with the few lichens, showed its resemblance to the Hummer's nest. I prize these three little nests as showing the love of birds for their old home. The Rufous is not so abundant breeding here as the Anna's or Allen's. My records since 1880 show the Rufous' nest described to be the earliest taken or noticed by me here.

I may as well go back a little to the Western Red-tail, spoken of in the beginning of this article. The nest I was after is placed on top of a fifty foot derrick pole. The pair have raised a brood there every year since 1882, to my knowledge, on this odd nesting site. They have eggs ready for incubation by the first of March each year. The nest is solidly built of large sticks and twigs, lined with fresh live oak leaves and tufts of dry grass every season. Four wire cable guys extend out from the top, under the nest, and run down to fastenings in the sand-stone rocks lying about.

Breeding of the Hairy Woodpecker in Southern Massachusetts.

The Hairy Woodpecker (*Dryobates villosus*) is not ranked as a common breeder in this part of New England, and two authentic instances may be worthy of record. May 19, 1885, a nest was found by myself, excavated in the trunk of an old decayed apple tree. It contained four eggs, much advanced in incubation, but which were preserved in good condition. During a recent visit of several members of the Bristol County Ornithological Club to Plymouth County, one of the number, Mr. Charles H. Andros, found a nest of the Hairy Woodpecker in a similar position as the first mentioned incident. F. H. C.

THE
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FREDERIC H. CARPENTER, Editor.

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Editorial.

In place of Mr. Webster's continuing chapter in "Practical Taxidermy," we give another method of making specimen's for cabinets, by a valued correspondent. Mr. Webster will continue his articles in the following issue.

We have read with care Mr. Oliver Davie's revised edition of his *Key to the Nests and Eggs of North American Birds*, and consider it a very valuable work for all oölogists who desire an aid to the prosecution of their studies.

Through the courtesy of the Secretary, Mr. A. W. Butler, we have received the Bulletin of the Brookville Society of Natural History. Of especial interest to our readers, we notice a list of birds of Franklin County, Ind., by Amos W. Butler. This list gives annotations of 235 species, duly representing the local ornithology of that vicinity, and reflecting credit upon the compiler.

Mr. Charles F. Morrison, Vice President of the Bristol County Ornithological Club is at Fort Lewis, Colorado, where in that almost unexplored (ornithologically) country he will study the avi-fauna diligently

and systematically. We congratulate our selves upon the fact that we are to receive the reports of his labors, which we can assure our readers will be interesting and valuable, for it is seldom that a country so abundant in little known birds receives the investigations of such a competent Ornithologist, as we know Mr. Morrison to be.

With this issue we close the first half year of our connection with this magazine. Our relations with all concerned have been most pleasant, and we have endeavored to merit the kindness, so freely shown by the subscribers, by upholding their legitimate interests, in the face of apparently overwhelming opposition; which has in many cases had the effect of bringing communications, with personal disparaging remarks against us, but in every instance reminded us of the adage; "A hit bird flutters."

We know we have defended a most worthy class of naturalists, and we take the liberty of asking a reciprocation. The season of active field work with many is now at its height, or a little past its prime. and a period of study and reflection upon the season's observations should follow. Every one can find in his notes something of value to science, and such should be given to public notice. The ORNITHOLOGIST and OÖLOGIST invites such communications and offers its columns for such purposes, and by such means it can be proven openly—that which we already know—that the clientele of the O. and O. stands ahead of any other ornithological magazine published in this country.

We are not pleading for manuscript for publication; in fact, we frankly state that we have at the present time sufficient manuscripts to occupy the O. and O. for the remainder of the present year, and we owe apologies to the many contributors whose articles have failed to appear, and hope they will continue to favor us, for by such means we can select such notes as are of the most general interest to our readers.

Practical Taxidermy.

CHAPTER XI.—MAKING BIRD SKINS.

From the Manuscript of F. W. Higgins, M. D., Chemung, N. Y.

Better general directions in taxidermy could hardly be given than those in the last number of the O. and O. There is one modification of the common rule for skinning birds, which is practised by some, and may be worth mentioning.

The method generally given is to make the incision from the breast bone to the tail and invert the skin. In this way there is danger of opening the abdomen and soiling the feathers, the back gets unaccountably mussy, and some steps of the operation seem like working in the dark.

Some who are not adepts may, like myself, find it easier to cut farther forward. Part the feathers carefully and make the incision along the whole length of the keel. Separate the skin on both sides, then work with the handle of the scalpel or thumb nail down to one shoulder. Turn it out and cut off the wing. Use plenty of corn meal. Then work toward the neck; curve it up and cut it off. The other shoulder is then easily exposed. Hook up the bird and work toward the tail, cutting off the legs on the way. Pull out each leg, wing and the head separately, clean and poison. You will find you are right in the middle of your bird and can see what you are about.

In shaping up the specimen, one may put in a neck and a trifle in each shoulder. Then fill out the tail and each leg. Roll up a small body and fit the skin over it. Take a little pains with the ball stitches, not to include any feathers.

In laying the birds out I have succeeded with a shingle covered with a layer of batting, brought up around the skin and lightly held by pins each side.

List of Birds Observed in the Vicinity of Santa Barbara, Cal., During the Year 1885.

READ BEFORE THE SANTA BARBARA SOCIETY OF NATURAL HISTORY, JAN. 26, 1886.

BY CLARK P. STREATOR. PART III.

(The nomenclature is that of the Smithsonian Check List, by R. Ridgway, 1881.)

Ardea herodias, (Great Blue Heron). Common resident. Breeds.

Herodias alba egretta, (American Egret). Winter resident. Not very common.

Garzetta candidissima, (Snowy Heron). Winter resident. Common.

Butorides virescens, (Green Heron). Migratory. Not very common.

Nyctiardea grisea navia, (Black-crowned Night Heron). Resident. The most common of all the herons; found in all parts of the city where there are large cypress trees for them to roost in.

Botarus lentiginosus, (American Bittern). Winter resident. Not very common.

Ardetta exilis, (Least Bittern). I have noticed a few of these birds passing north in spring.

Plegadis guarauna, (White-faced Glossy Ibis). Migrant. Not very common. I have only noticed the bird in spring.

Hematopus niger, (Black Oystercatcher). I have never noticed this bird on the main land, but found them common on Santa Cruz Island, last March.

Streptilas interpres, (Turnstone). I shot one of these birds last fall. I do not think them to be very common.

Oryechus vociferus, (Killdeer). Resident. Not very common.

Agialites semipalmatus, (Semipalmated Plover). This spring is the first time I have ever noticed these birds.

Agialites cantianus nivosus, (Snowy Plover). Very common resident. Breeds. Found along the sea shore.

Gallinago media wilsoni, (Wilson's Snipe). Common winter resident.

Heteroscelus incanus, (Wandering Tattler). I have noticed a number of these birds on the sea shore when they were migrating.

Actodromas minutilla, (Least Sandpiper). Very common winter resident.

Ereunetes pusillus occidentalis, (Western Sandpiper). Very common; associates with flocks of the former.

Calidris arenaria, (Sanderling). Common winter resident.

Totanus melanoleucus, (Greater Yellow-legs; Tell-tale). I never saw but a very few on the main land; but they were plenty on Santa Cruz Island.

Rhyacophilus solitarius, (Solitary Sandpiper). Only occasionally seen.

Numenius longirostris, (Long-billed Curlew). Rare. Only occasionally seen.

Numenius hudsonicus, (Hudsonian Curlew). Large quantities of these birds pass northward in spring.

Phalaropus fulicarius, (Red Phalarope). I have collected only one specimen of this bird.

Recurvirostra americana, (American avocet). A rather common spring migrant.

Himantopus mexicanus, (Black-necked Stilt). A rare spring migrant.

Rallus obsoletus, (Californian Clapper Rail). Rare. One specimen is all I have seen. It was shot last December.

Rallus pygmaeus, (Virginian Rail). Rather a common bird about the tules and marshes.

Porzana carolina, (Sora Rail). A very common winter resident.

Gallinula galeata, (Florida Gallinule). Very rare. Only occasionally seen.

Fulica americana, (American Coot). A very common winter resident. A few, however, are residents throughout the year, and breed.

Grus canadensis, (Sandhill Crane). A rather common spring and fall migrant. They pass over usually at a great height.

Anas boschas, (Mallard). Resident. Breeds in an estuary about six miles from this city.

Dafila acuta (Pintail). An abundant winter resident.

Mareca penelope, (Widgeon). Winter resident. Not common.

Querquedula discors, (Blue-winged Teal). Winter resident.

Querquedula cyamoptera, (Cinnamon Teal). Winter resident.

Aix sponsa, (Wood Duck; Summer Duck). One of the rarest of ducks about Santa Barbara, although they are occasionally met with beyond the Santa Ynez Mountains, about ten miles from this city.

Fulix affinis, (Little Blackhead). Common winter resident.

Ethya vallisneria, (Canvas-back). Winter resident. Rather common.

Ethya americana, (Redhead). Winter resident. Not common.

Clangula albeola, (Butterball; Bufflehead). A rather common winter resident.

Pelecanus perspicillatus, (Surf Duck). Abundant winter resident in the Santa Barbara Channel, never frequenting the land.

Erismatura rubida, (Ruddy Duck). Rare. I have never met with more than three or four specimens.

Pelecanus erythrorhynchus, (American White Pelican). Rare at this place. I have only collected one specimen.

Pelecanus fuscus, (Brown Pelican). Resident; much more common in winter. I have good authority that they breed on the islands.

Phalacrocorax dilophus, (Double-crested Cormorant). Not very common about Santa Barbara, but may perhaps be more plenty about the islands.

Phalacrocorax penicillatus, (Brant's Cormorant). Common about the bay at Santa Barbara except during the breeding season, when they retire to the islands.

Phalacrocorax violaceus, (Violet-green Cormorant.) I never saw this bird on the main land, but saw a few on Santa Cruz Island last March.

Larus occidentalis, (Western Gull). Common resident in all seasons of the year but spring, when they retire to the islands to breed.

Larus californicus, (Californian Gull). Common winter resident.

Larus heermanni, (Heermann's Gull). Winter resident; rather common.

Larus philadelphiae, (Bonaparte's Gull). I have noticed only a few specimens of this Gull. They were here in winter.

Larus delawarensis, (Ring-billed Gull.) Rather common in winter.

Sterna regia, (Royal Tern). I have noticed a few of these birds at almost all seasons of the year.

Diomedea brachyura, (Short-tailed Albatross). Very Rare. I know of only two specimens being shot at this place. The last one of these was taken fifty miles at sea. It was shot about the middle of last March. The specimen I mounted and have it in my collection.

Phaethria fuliginosa, (Sooty Albatross). This Albatross is said to be more common than the former, but I have never seen but one specimen.

Echmophorus occidentalis, (Western Grebe). Common winter resident on the ocean.

Dytes auritus, (Horned Grebe). Not common. Have only shot one specimen.

Dytes nigricollis californicus, (American Eared Grebe). Common. I think it breeds on the islands.

Podilymbus podiceps, (Thick-billed Grebe). Winter resident; not very common.

Colymbus torquatus, (Loon). Winter resident. Rare.

Colymbus pacificus, (Pacific Diver). Winter resident. Not common.

Lunda cirrhata, (Tufted Puffin.) Found upon the Santa Barbara Islands.

Brachyrhamphus marmoratus, (Marbled Guillemot). Rare. The only specimens I ever saw were shot here last winter.

Winter Birds of Morristown, N. J.

Observed During the Months of December, January and February, 1885-6.

BY E. CARLETON THURBER AND MORRIS M. GREEN.

1. Hermit Thrush, (*Hylocichla ustulacea pallasi*). Probably a rare winter resident, once seen Jan. 30.

2. Robin, (*Merula migratoria*). A not common winter resident.

3. Bluebird, (*Sialia sialis*). A common winter resident, feeding on the berries of the cedar.

4. Golden-crowned Kinglet, (*Regulus satrapa*). A rare winter resident.

5. Tufted Titmouse, (*Lophophanes Bicolor*). A common resident.

6. Black-capped Chickadee, (*Parus atricapillus*). A common winter resident, rather rare in summer.

7. White-bellied Nuthatch, (*Sitta carolinensis*). A common resident.

8. Brown Creeper, (*Certhia familiaris rufa*). A rather rare winter resident.

9. Great Northern Shrike, (*Lanius borealis*). A rare winter resident.

10. Purple Finch, (*Carpodacus purpureus*). Common all winter in the cedars.

11. American Goldfinch, (*Astragalinus tristis*). Common in cedars and among the birches and alders.

12. Tree Sparrow, (*Spizella montana*). Abundant all winter.

13. Black Junco, (*Junco hyemalis*). Abundant.

14. Song Sparrow, (*Melospiza fasciata*). Tolerably common all winter.

15. Meadow Lark, (*Sturnella magna*). Tolerably common.

16. American Crow, (*Corvus frugivorus*). A common winter resident, abundant rest of year

17. Blue Jay, (*Cyanocitta cristata*). A common resident.

18. Hairy Woodpecker, (*Dryobates villosus*). A rare winter resident, still rarer in summer.

19. Downy Woodpecker, (*Dryobates pubescens*). A common resident.

20. Red-headed Woodpecker, (*Melanerpes erythrocephalus*). A rare winter resident.

21. Belted Kingfisher, (*Ceryle alcyon*). Stay here while the streams are open. Seen Feb. 23d and in early December.

22. Long-eared Owl, (*Asio wilsonianus*). A tolerably common resident.

23. Short-eared Owl, (*Asio accipitrinus*). A late fall and early spring migrant, common on wet meadows during early part of February.

24. Barred Owl, (*Syrnium nebulosa*). A tolerably common resident.

25. Screech Owl, (*Megascops asio*). A common resident; thirty-five were taken in two and a half months of the fall.

26. Great Horned Owl, (*Bubo virginianus*). A rare resident.

27. Sparrow Hawk, (*Tinnunculus sparverius*). A few stayed all winter.

28. Marsh Hawk, (*Circus hudsonius*). Was here until the first part of January, returning the latter part of February.

29. Red-tailed Hawk, (*Buteo borealis*). A common resident.

30. Red-shouldered Hawk, (*Buteo lineatus*). A few stayed all winter.

31. Rough-legged Hawk, (*Archibuteo lagopus sancti-johannis*). A common winter visitor.

32. Mourning Dove, (*Zenaidura macroura*). One was seen Jan. 11th, and another Feb. 19th.

33. Ruffed Grouse, (*Bonasa umbellus*). A common resident.

34. Colin; Bob-white, (*Colinus virginianus*). A common resident.

35. White-headed Eagle, (*Haliaeetus leucocephalus*). A rare accidental visitor; one seen December 9th.

Spring Migration at Raleigh, N. C., in 1886.

BY C. S. BRIMLEY.

PART I.—MARCH MIGRATION.

The spring migration here consists, broadly speaking, of two very well defined periods—the first being that of the March migrants and including all the migration which takes place until the arrival of the Warblers; this period is characterized by the migration of Blackbirds, Robin, Snipe and Killdeer, Robins and Blackbirds being far commoner during this period than at any other time in the year. The second period is that of the April migrants, beginning with the arrival of the migrating Warblers in the last week of March or the first of April and lasts till the close of migration in the middle of May.

The first movement of any kind during this spring occurred about the middle of February, when a few Redwings and Cowbirds put in an appearance and Feb. 15th Woodcock arrived and were tolerably common, but their numbers diminishing next day (only one had been seen before this year, on Feb. 13th). Mourning Doves, which had been unusually scarce all winter, increased to their usual numbers about this time, the bulk arriving Feb. 15th; Killdeer also, which had been scarce since the first week in January, put in an appearance a few days later and became tolerably common once more on Feb. 23d. The first Snipe were seen on Feb. 23d and 27th, a Green-winged Teal Feb. 27th, two Rusty Grackles on Feb. 23d, and a single Crow Blackbird on the last day of the month.

Woodcock increased in numbers on March 4th, but all had left next day, after having been commoner ever since their first arrival than they usually are in spring.

On March 6th, a very slight warm wave having

struck us the day before, Cowbirds, Redwings, Crow Blackbirds and Robins arrived, but none of these species were at all common, except on the day of their arrival, till March 15th, when Cowbirds appeared in great numbers and more Redwings and Crow Blackbirds arrived; most of the Killdeer left us on that same night as well.

The most prominent feature of the March migration this year has been the great abundance of Cowbirds which have outnumbered all other Blackbirds at least three to one, none of the three other species being as plentiful as usual.

On March 17th I noticed that Chipping Sparrows, which had been almost entirely absent this winter, were getting commoner again, and now (March 24th) they are present in their usual numbers. A large proportion of both Meadow Larks and Cowbirds left us on the night of March 19th, but no fresh arrivals were noted on that date. Six Green-winged Teal, probably the last of the season, were seen on March 19th. Pine-creeping Warblers, which had been scarce in February, increased largely in numbers on the same date.

Wilson's Snipe have been observed quite frequently during March, but at no time have more than five been seen on one day (March 23). Robins did not become common in this immediate vicinity till March 22d, but I heard they were quite plentiful on the other side of town two weeks ago. This about finishes my record of the March migrants; of our winter visitors only two species (besides the Meadow Larks) have left us, viz: Fox Sparrow last seen March 6th and Tit Lark, March 8th.

A single White-bellied Nuthatch was seen Feb. 18th, and another on March 17th, though the species are usually common enough except in summer.

A Wild Turkey, (which bird is not often seen near the city) was observed near Neuse River on Feb. 16, and another was seen near Walnut Creek within two miles of town on March 19th.

Notes on Fall Migration from Morristown, N. J., Fall of 1885.

BY E. CARLETON THURBER AND MORRIS M. GREEN.

Sept. 14th, a Great Crested Flycatcher was heard and a few Nighthawks were seen.

Sept. 15th, great numbers of Nighthawks were seen flying south. Early in the morning a large flock of Chimney Swifts were seen flying south-west.

Sept. 18th, Blue Yellow-backed Warblers seen for the first time this autumn. Also several Rose-

breasted Grosbeaks heard and a male Olive-sided Flycatcher taken.

Sept. 18th, a Black Snowbird taken, apparently a young male moulting, a female Crimson Finch and a young male Black-throated Green Warbler were also taken. Four Nighthawks flying south and a Wood Pewee were seen.

Sept. 20th, two Scarlet Tanagers in the olive-green plumage were observed.

Sept. 21st, saw about ten Lincoln Sparrows and a flock of five Bobolinks, a rather rare bird here of late years, on Columbia Meadows.

These fresh water meadows, about a mile and a half long by three-quarters of a mile wide, are flooded for about nine months of the year and are much frequented by Ducks, White-bellied Swallows, Snipe, Rails, Blackbirds and Hawks, especially Marsh Harriers. A few White-bellied Swallows were seen there.

Sept. 22d, saw a single Wood Thrush, the last of the season, and a pair of Brown Thrushes.

Sept. 23d, a Hummingbird was seen.

Sept. 24th, a fine male Connecticut Warbler taken, a flock of about ten Mourning Warblers were seen in a white birch thicket; two of them were obtained with a single Blue Yellow-backed and a young male Black-throated Green. Field Sparrows were abundant. Four Chimney Swifts and a male Redstart were seen.

Sept. 25th, a flock of seven Blue-headed Vireos, a company of a dozen Olive-backed Thrushes, a single male Black and White Creeping Warbler, and a female Redstart were seen.

On the meadows great numbers of Swamp Sparrows and White-bellied Swallows were seen.

Sept. 27th, a few male White-throated Sparrows.

Sept. 29th, White-throated Sparrows were common.

Sept. 29th, a large flock of White-bellied Swallows and Chimney Swifts flying south.

Saw a single Night Heron. Field Sparrows still common. During this week the mornings and evenings were very foggy and the days warm.

Oct. 2d, a single Phoebe, the last one seen.

Oct. 5th, three Wood Ducks and six Chimney Swifts.

Oct. 7th, two Catbirds, a single House Wren, a Black-throated Blue Warbler and two Yellow-rumped Warblers, the first for the fall.

Oct. 8th, the last Chimney Swifts, two in number, and a male Black-throated Blue Warbler.

Oct. 9th, the last Maryland Yellow-throat, a young male, seen. Also a flock of Wood Ducks, two Carolina Grebes, a single Junco, and a number of Ruby-crowned Kinglets noticed.

Oct. 10th, two Crimson Finches were seen flying overhead.

Oct. 11th, a warm day. Two Nighthawks going north, six Blue Yellow-backed Warblers, a flock of about fifty Field Sparrows, a few Black-throated Green Warblers, numerous Yellow-rumps, ten Juncos and three Yellow-bellied Woodpeckers, the first noted this autumn.

Oct. 14th, two Black-throated Green and three Black-throated Blue Warblers, ten White-bellied Swallows and three Catbirds, the last seen.

Oct. 15th, saw twenty-six Chewinks, of which all but three were males; these must have left during the night or on the next day.

Oct. 16th, saw but one of above.

On the meadows, about three hundred Titlarks and a hundred or more White-bellied Swallows were seen. Field Sparrows were still common.

Oct. 17th, the meadows were again visited; White-bellied Swallows were numerous, a dozen Titlarks seen. Savannah Sparrows were common.

Oct. 20th, Bay-winged Sparrows numerous on the hills. One Ruby-crowned Kinglet, the last one noted.

Oct. 23d, Hermit Thrushes are common. Ten Juncos seen, the first since the 11th inst.

Oct. 24th, fifty White-bellied Swallows, many Titlarks, four Red-headed Woodpeckers, three Killdeer Plover and the last Chewink, seen on the meadows. Juncos numerous.

Oct. 25th, a flock of twenty-five Rusty Grackles were seen feeding on acorns.

Oct. 30th, many Field Sparrows were seen.

Nov. 2d, the last Hermit Thrush and the first Fox Sparrow and Hairy Woodpecker were observed.

Nov. 3d, brought the last Mourning Dove and the first four Tree Sparrows.

Nov. 8th, Columbia meadows were re-visited; noticed a few Titlarks, several Purple Grackles in a large flock of Red-winged Blackbirds. A small flock of Mallards and several of Dusky Ducks were noticed. The last Killdeer seen and the first Tufted Titmouse were heard calling.

Nov. 14th, the Tree Sparrows were plenty and melodious.

Nov. 22d, the first Great Northern Shrike was reported.

Nov. 29th, the ice formed half an inch thick. Saw eleven White-throated Sparrows and a Kingfisher.

Nov. 30th, fourteen White-throated Sparrows seen.

Dec. 5th, saw only four White-throated Sparrows and a Kingfisher, the last of each.

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BY WRIGHT AND BATES, 73 HANOVER ST., BOSTON

(Continued from page 78.)

LEPIDOPTERA.

PECULIARITIES: Four wings, covered with scales on both sides; these scales are overlapping, arranged in rows and give the colors and shadings to the wings.

Mouth parts forward for sucking. Larvæ in the form of caterpillars, composed of thirteen segments. Pupa obtected, conical in form, producing moths; or angulated, producing butterflies.

LOCALITIES. The imago, or perfect insect of this sub-order is to be found in nearly every locality during the spring, summer and autumn. They flit about the fields, meadows and woodlands during every hour of the day and night; they alight upon the flowers to sip their honey and the next moment are away over the fields: They alight upon the bark and foliage of trees, on the fences, and during the day the night flyers are hidden away in the grass, under the stones, fences, leaves, and in the shade of the woods, emerging at evening to take the place of the butterflies in flying about the fields.

Their larvæ will be found feeding upon vegetation. They are captured by the net while flying or resting upon the plants; by baiting or sugaring in the evening, upon the trees or fences, or best of all, by raising from egg, worm, or pupa in the vivarium.

The instructions given in preceding pages apply very well to all the sub-orders mentioned, but some members of this one need special instructions, and we shall in the near future give our readers instructions for collecting the *Microlepidoptera*.

Sphingidae of New England.

CERATOMIA AMYTOR.—Hb.

Palpi brown. Head gray or grayish-brown; antennæ white above, dark beneath.

Thorax fawn color, with a dark patch or line on either side, followed by gray at the base of the wings, and two dark brown spots on the metathorax. Abdomen light brown, with a slen-

der black dorsal line, and two broad undulating black lines on either side.

Anteriors: Costal margin nearly to the middle of the nervules, light fawn color; posterior margin, dark brown or blackish, with three or four black longitudinal lines, originating at the discal cell; discal spot, white; two or three undulating black lines, alternating with white ones, extend along the marginal space, nearly parallel with the margin, to the sub-costal veinlets, and from thence almost at right angle with, and to the costal margin; the marginal space near the tip is occupied by a black patch from which extends a long black line nearly to the discal spot; fringes, brown, spotted with white.

Posteriors, pale brown or buff; a blackish band extends across the wing, followed by a blackish line, crenated anteriorly; margin blackish, lighter at the anal angle.

Under side, fawn color; two or three irregular black lines, crenated anteriorly, extend across both wings, following the same course as the corresponding ones on the upper side; an irregular line runs from the tip of the anterior wing to the outer of these lines, the space enclosed by the line at the tip, being a greyish brown, as is also the anterior edge.

Expanse about four and one-half inches; flies in May and June.

Mature larvæ, which appears in September, is about three and one-half inches long, of a pale green color, with seven oblique white lines on either side of the body; caudal horn, greenish. This larvæ may be distinguished from all others of this family by the four short, notched horns on the shoulders.

Transformations, subterranean. Pupa, dark brown, smooth, with the tongue case not apparent.

Food plants: American elm and linden.

Notes from Michigan.

BY R. H. WOLCOTT, GRAND RAPIDS, MICH.

The following captures are, I think, worthy of record, although not made by myself:

On the 1st of July, last year, while after *Melitæa Phaetons*, with Mr. L. S. Livingston of this place, he captured a curious specimen, which Mr. Strecker identified as his *var. superba*, described in his "Catalogue of the Butterflies of North America," of which but few examples have ever been taken. It is now in Mr. Strecker's possession.

July 15th the same collector took, at Ada, a village a few miles east of this city, an *Apatura*

clyton, Bdl., Lec., approaching *var. Proserpina* of Seudder; and on Aug. 21st., at the same locality, a nearly full grown larvæ of *Libythea bachmani*, Kirtland, on the ground beneath a hackberry tree, (*Celtis occidentalis*). This tree is a food plant of both the last mentioned species and grows at a few points in the county, sparingly, however; but I am unable to learn of any previous capture of *Apatura clyton* and of but one instance of the taking of the *Libythea*, in this section of the state, which was during the summer of 1883, when another local collector, Mr. Clinton Osborne, captured one rather poor specimen, at or near the same locality as mentioned above. The two are generally southern species, being rare as far north as this.

Food Effect Upon Color.

BY A. W. P.

Collectors of the large moths, such as *Samia Cecropia* and *Telea Polyphemus* soon notice the wide variation of color in these species of moths, the first ranging from a light grey to almost a deep blue-black; and the second from a light fawn color to a very reddish hue. The lighter colored types lose the brilliancy of their markings and are not nearly so handsome or attractive as those of greater depth of color. To a breeder of moths it becomes essential to get the best results to know something of the effect of food upon the color of the plumage.

This is a subject upon which too little is known, and opens an interesting field for study. Both *S. Cecropia* and *T. Polyphemus* in the larval state are found subsisting on a great variety of foliage. The caterpillar of the *Cecropia* moth I have found feeding upon wild plum, apple, alder, wild cherry and bayberry leaves; and that of *T. Polyphemus* upon oak, wild cherry, butter-nut and sumach leaves and the tender fronds of ferns. I have experimented a little in the way of feeding the larvæ and the result has satisfied me that a person familiar with food effects can tell from the color of the mature moth when captured what the larval food was.

Experience has taught me that larvæ captured in the fields flourish best upon the foliage of the plant upon which they are found. When once the caterpillars have created a taste for wild cherry it is next to impossible to make them take kindly to apple leaves; and if they do not sit and starve rather than submit to the change, they will fast until hunger forces them to eat, and this fasting season tends to dwarf and injure the perfect insect. But started from the egg a brood of larvæ may be divided up and placed upon differ-

ent kinds of foods, and they will get on well if the food is kept fresh and their life condition kept as natural as possible.

To procure the best results in moth raising the caterpillars must be fed upon their preferred food plant and kept feeding, with only brief fasts in the moulting seasons, until they spin their cocoons.

The *Cecropia* moth that has matured upon wild cherry is not the equal in size or beauty of the moth fed upon apple foliage. It is weaker in color of plumage, and the contrasts in the coloring of the wings are much less decided.

The *Polyphemus* moth that is nourished upon fern fronds is usually of the lightest fawn color, the least attractive and most dwarfed of this race of lepidopterous giants, while that fed upon oak leaves takes on a reddish hue that gives it brilliancy at the expense of size. The largest moths of this class that I have ever seen were raised upon wild cherry; but I believe that the best plumaged were the result of oak-feeding.

These experiments prove entertaining and can be easily tried by raisers of larvæ of any kind.

“Sembling.”

BY A. W. P.

Among lepidopterous insects the power of the virgin female to attract the males is marvellous and little understood by the most experienced moth and butterfly collectors, for she sits quietly, making no sound, and there is no perceptible odor by which the phenomena may be explained. Nevertheless, it is a fact, and out of it grew the practice known to lepidopterists as “sembling,” or attracting butterflies and moths. Hence, the finding of a virgin female of a rare species is of exceptional consequence to the collector, who, instead of putting her to death, carefully preserves her, and placing her in a gauze bag or cage uses her as a decoy for males of her own species, which are attracted by her wiles, in large numbers.

I have practiced this art more or less in the past twelve years and have learned something from it. Residing in the center of a city, I must be from one to two miles from the feeding grounds of these moths. Just after mid-day of June 5th, 1882, I found upon a fence a female of the *Callosamia promethea* moth of Drury. I had no sooner captured her than I saw a male approaching; and while I stood with her in my hand four male moths congregated about me, circulating over my head and now and then lit upon my clothing. I took the moth home and

placed her in a gauze cage near an attic window. Between 2 and 3 o'clock on the afternoon of the 6th, the male moths began to appear, and with net in hand I captured sixty males in two hours and then stopped because I had taken enough, not because the arrivals lessened. The males were flying about the yard in considerable numbers until night fall.

I have had similar experiences with *Telea polyphemus*, *Samia cecropia*, *Attacus luna* and *Saturnia Io*.

A virgin female of the Corn Emperor moth (*Saturnia Io*), owned by a friend, attracted to his house twenty-eight males in June, 1880, all of which were captured in good condition, in the space of an hour.

This practice satisfies me that *Callosamia promethea* is a day flier, as it invariably comes in “sembling” before 3 o'clock in the afternoon; and this moth flies in largest numbers. *Samia cecropia* and *Telea polyphemus* come shortly after dark, and quite plentifully, while *Attacus luna* seldom approaches the trap till midnight, or later.

Any one wishing to test the power of the female insect may do so in the summer months and satisfy themselves that facts are often stranger than fiction.

Ecpantheria Scribonia.

BY CYANIDE.

This beautiful leopard moth, though rare here, is not uncommon in some sections of the country.

In the winter of 1880-81, I found the remains of many cocoons while collecting on and near the Lake of the Thousand Islands, on the St. Lawrence River. As soon as the snow was off the ground, I tried sugaring on the edge of a grove and as I turned my lantern toward a pine tree I noticed a large woolly bear ascending the trunk very rapidly. I, of course captured him, and finding it too early to meet with much success sugaring, I turned my attention to the pine trees. Between 9 and 10 o'clock that night I took seven full grown larvæ of this moth. I kept some of them and a friend took the rest. In a few days they spun their cocoons and soon developed as perfect flies. My specimens invariably left their cocoons in the night and in a short time were in active flight around the box in which they were confined. I consequently found it very difficult to save them in a perfect condition. I either had to take my chances of their wings being injured or kill them before they were dry enough to mount without staining the plumage.

I afterwards found some of the cocoons in the crevices of the bark of pine trees.

CORRESPONDENCE.

Destruction of our Native Birds.

EDITOR OF ORNITHOLOGIST AND OÖLOGIST—Sir: There are certainly two sides to this question, only one of which has as yet received my attention. That the movement set forth by the A. O. U. is a good one there can be no doubt, but at the same time the enormity of the offense is not so great as some would have us believe, at least not as regards the taxidermists. Young oölogist, who so far have received all the blame for the so-called scarcity of certain native birds, I propose to give a few instances pointing towards other and much greater causes than the above for the scarcity. 1st, the advance of civilization, which drives the birds from their accustomed haunts, and not to mention the telegraph wires, lighthouses, etc.

2d. The so-called sportsman who shoots at everything that flies; let me give one or two instances. In the summer of 1884 I was spending my month's vacation in Pike county, Pa. There came to the hotel two such persons, with the most approved pattern of breech loaders. The very next day they commenced to bang away at every living thing. I counted forty-nine insectivorous birds that these two brutes killed on their first day's hunt. They kept this thing up the entire two weeks of their stay. I tried my best to stop them but was unable to do so. Another with a boat anchored out in mid-stream, shooting at the Swallows that were flying overhead, their dead bodies floating off with the current. Such scenes as these are being enacted in all parts of our country, and almost every day. But let me ask a question, did you ever see a taxidermist or young oölogist do any thing like this. I think not.

In a recent article mention is given of the farmer's cat, I think it should have been *cats*, as it is seldom that we come across a farmer's house or barn without at least two cats, sometimes five or six. Let me give one instance of cat work. In the summer of 1874 I was staying on a farm in Berks Co., Pa., which boasted seven cats. One old fellow of the Thomas persuasion would daily catch young birds, sometimes old ones, this cat fully averaged two birds a day during the nesting season.

I hope no one will misjudge me from these remarks. No one more so than myself desire to see our song and insect-eating birds protected, and I will, as I always have, do what I can to protect their useless slaughter, and I hope to see the day when a woman will feel ashamed to wear a bird on her hat. It is to say the least a barbarous fashion. In Philadelphia at least, not half the hats with birds upon them are to be seen to what there was just three years ago. —Philip Laurent, Member of the Phila. A. of N. S.

RECENT PUBLICATIONS.

Egg Check List and Key to the Nests and Eggs of North American Birds. By Oliver Davie. Second Edition, revised and enlarged; with seven full-page engravings by Theodore Jasper, A. M., M. D., Columbus, O.; Hann & Adair, Printers, 1886. Pp. iv, 184, 8 vo.

A little over a year ago Mr. Davie issued the first edition of his Egg Check List, and that volume met with such a signal success that he was speedily called upon to prepare a second edition. He determined to make radical changes in the latter, and now that the result is before us it is most satisfactory. Almost all the species of birds whose eggs have been discovered are to be found in this edition, and there is a fullness of description, and of interesting details, which was entirely wanting in the first issue.

First Mr. Davie gives the color of the eggs, then their

number and size, and a description of the nest, or of the place where they are found. The habitat of the bird, together with many other valuable details, follows. Wherever possible Mr. Davie has described the eggs either from specimens in his own extensive cabinet, or from those in the collections of his friends and correspondents. Very few of the descriptions are taken from the works of previous writers, and the whole book is fresh and original, and cannot fail to prove of the greatest value and use. It is more-over written in a plain and unassuming style which is truly refreshing after the quantity of so-called "scientific" stuff with which we have been lately deluded. True science has to use latin names because they are recognized all over the world, and tend to prevent the confusion which would certainly arise were vernacular names alone depended on, but this unnecessary reiteration serves no good purpose, and drives off many would-be students.

Mr. Davie describes many rare species of eggs for the first time, and he has brought together a mass of information concerning them which is in the highest degree entertaining and valuable.

The number of eggs laid by each species is a point about which there have been more mistakes made by oölogists than anything else, and while Mr. Davie has done much to correct the errors of previous writers in this respect, he has occasionally fallen into some himself by fearing to disregard old time authorities in this particular.

Dr. Jasper's illustrations could well be spared, but they will no doubt serve to make the book attractive to our younger readers. The faults of the book are few, while its merits are many, and have only been slightly touched upon above. We heartily recommend it to our readers as one of the cheapest and best books on oölogy ever published.

J. P. N.

BIRDS OF KANSAS.—Col. N. S. Goss of Topeka, Kansas, has compiled a list of the birds of that State, giving the general habits of the birds, time of arrival, nesting and occurrences of rare species.

Mr. Goss gives notes on 335 species known to occur within the State, and in this work shows considerable advancement over his previous list. Such books as the above are valuable and if every State should follow the example of Kansas, and secure the services of competent ornithologists to represent the bird-life, the result of the united endeavor would surpass any published work on our North American birds. The ornithologists of Kansas should be congratulated upon having such a varied bird-life and so competent a leader as Mr. Goss.

LIST OF BIRDS OF VENTURA COUNTY, CALIFORNIA, by Barton W. Everman. This is a reprint of the original papers which appeared in *The Auk*, Vol. III, No. 1-2. 200 species are recorded, and show the result of careful investigation by a discerning observer of birds.

The Coues New Key to N. A. Birds is now out of print and a new edition is expected within a few months.

NOTICE TO CONTRIBUTORS.—In reply to several enquiries we would say that articles giving records of migration, while valuable, could be used to better advantage if forwarded to the proper parties who have charge of the department of "Economic Ornithology," at Washington, rather than if published in these columns, as notes of migration are of much more value when studied on an extended scale and conjointly with many observations.

We desire to acknowledge articles from the following contributors, for which they will please accept our thanks: Prof. B. W. Everman, W. C. Avery, M. D., C. S. Brimley, Frank L. Burns, Herbert Skell, A. G. Paine, Jr., Jos. M. Wade, H. Taylor, W. L. Maris, J. A. Singley, J. M. W., Wm. L. Kells, J. W. Preston, Walter Hoxie, C. W. Crandall.

JULY, 1886.

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BOSTON, MASS., JULY, 1886.

No. 7.

List of Birds Observed at Pensacola, Florida.

BY BARTON W. EVERMANN.

Concluded from Page 81.

62. *Pipilo erythrophthalmus alleni*, Coues. (587a). White-eyed Towhee. Less common than the preceding. One soon learns to distinguish the two species by their notes.

63. *Cardinalis cardinalis*, (Linn.) (593). Cardinal. I was delighted to find this musical bird common at most points visited. Its clear note is one of the characteristic sounds of the region.

64. *Piranga rubra*, (Linn.) (610). Summer Tanager. A few males were seen at Tchina Point, March 21st, and afterward. On the peninsula at Saint Joseph's they were very common April 5th and 6th. Both males and females were present, and as they flitted among the palmetto palms and magnolias they added greatly to the beauty and tropical appearance of the scene.

65. *Progne subis*, (Linn.) (611). Purple Martin. Common about town, even as early as March 18.

66. *Petrochelidon lunifrons*, (Say.) (612). Cliff Swallow. A few were seen at Pensacola, March 24th, and others on subsequent occasions.

67. *Clivicola riparia*, (Linn.) (616). Bank Swallow. A few seen almost every day.

68. *Lanius ludovicianus*, Linn. (622). Loggerhead Shrike. The only specimen which I saw was one I shot on Santa Rosa Island, March 25th.

69. *Vireo flavifrons*, Vieill. (628). Yellow-throated Vireo. Shot one on Tchina Point, April 10th—the only one seen. I think I saw a Red-eyed Vireo on same evening, but am not certain about it.

70. *Mniotilta varia*, (Linn.) (636). Black-and-White Creeper. On most all my tramps in the woods about Pensacola I seldom failed to see one or more of this curious little warbler. They were most common at Saint Joseph's and near the navy yard. The first ones were seen March 21st.

71. *Helminthophila peregrina*, (Wils.) (647).

Tennessee Warbler. Several were seen at Tchina Point March 21st. I do not think I saw it after that date.

72. *Compsothlypis americana*, (Linn.) (648). Parula Warbler. This beautiful little warbler was quite common at Tchina Point, March 21st. It was much tamer than I had ever found it in the north, often permitting to approach within a few feet of it as it searched for food among the branches of the live oak. They were also seen in considerable numbers at Saint Joseph's.

73. *Dendroica coronata*, (Linn.) (655). Myrtle Warbler. This was by far the most abundant warbler to be seen, outnumbering all other species combined. We found them abundant upon our arrival (March 18) and they so continued throughout the period of our stay. Not only were they abundant in the groves about the town but the fruit and shade trees in the yards and along the streets visited by them. At Saint Joseph's also they were very abundant.

74. *Dendroica dominica albilora*, Baird. (663a). Sycamore Warbler. Not common, but seen everywhere. First noticed March 21st.

75. *Dendroica virens*, (Gmel.) (667). Black-throated Green Warbler. A male in full plumage was shot near "Uncle Aaron's" March 23d. A few others were seen about Pensacola and quite a number at St. Joseph's.

76. *Dendroica vigorsii*, (Aud.) (671). Pine Warbler. I shot a pair (male and female) at Tchina Point March 19th. A few others were seen later.

77. *Scirurus aurocapillus*, (Linn.) (674). Ovenbird. One taken at Tchina Point, March 26th, was the only one seen.

78. *Sylvania mitrata*, (Gmel.) (684). Hooded Warbler. I saw several fine males of this handsome warbler at Tchina Point March 21st, and a few again on April 10th. In the bird wave at St. Joseph's the Hooded Warbler was among the most numerous and most striking species. Only males were seen and they were remarkably tame and unsuspicious.

79. *Setophaga ruticilla*, (Linn.) (687). American Redstart. Not seen at Pensacola, but at Saint Joseph's several males were noticed.

80. *Anthus pensylvanicus*, (Lath.) (697). American Pipit. One of these little birds flew aboard our smack April 2d, when we were about seventy-five miles from land, being in the Gulf that distance southeast of Cape San Blas. It rested for but a few moments upon the main boom when it resumed its journey across the waters, flying very low as if already tired of its long flight.

81. *Mimus polyglottos*, (Linn.) (703). Mockingbird. This is the characteristic bird of the south, the one which will not fail to attract the attention of the winter sojourner from the north. Common everywhere, from the densest wood to the yards and gardens of the city, always full of song, he does not hesitate to demand your attention. Should he not receive the homage due him during the day, he will at night perch upon some tree near your window and pour out his melody upon the silent air. I thought they must be breeding, but long and careful search in various places failed to discover their nests.

82. *Harporhynchus rufus*, (Linn.) (705). Brown Thrasher. Rather common at all places visited, especially Santa Rosa Island. I do not remember to have heard any of this species singing as they do in the north soon after their arrival.

83. *Thryothorus ludovicianus*, (Lath.) (718). Carolina Wren. Not common, yet nearly every thicket contained one or two individuals.

84. *Thryothorus bewickii*, (Aud.) (719). Bewick's Wren. Rare; a few were noticed at different times.

85. *Troglodytes aëdon*, Vieill. (721). House Wren. Noticed on two or three occasions about the city.

86. *Troglodytes hiemalis*, Vieill. (722). Winter Wren. Seen but rarely; I obtained one in the edge of a titi swamp near Perdido. I showed the dead bird to some colored school children on their return home in the evening and they all called it the *Titi bird*, getting the name, I presume, from the swamps which they frequent.

87. *Sitta pusilla*, Lath. (729). Brown-headed Nuthatch. While spending a day along the beach between the city and the navy yard, March 23, my friend Mr. Silas Stearns shot two of these curious little birds. One or two others were seen. The next day I spent at Perdido, nine miles west of Pensacola. Among the pines in that vicinity I saw several more and secured four of them. One was noticed excavating a hole in an old pine snag on the edge of Bayou Mochas.

88. *Parus bicolor*, Linn. (731). Tufted Titmouse.

Seen frequently about Saint Joseph's and Pensacola.

89. *Purus carolinensis*, Aud. (736). Carolina Chickadee. Several were seen at Perdido, but none elsewhere.

90. *Poliophtila carulea*, (Linn.) (751). Blue-gray Gnatcatcher. A few were generally seen in every grove visited.

91. *Turdus aonalaschke pallasii*, (Cab.) (759b). Hermit Thrush. Seen but rarely. One secured at Tehina Point.

92. *Merula migratoria*, (Linn.) (761). American Robin. Only a few Robins were seen. People living in Pensacola told me that Robins are abundant there in the winter.

93. *Sialia sialis*, (Linn.) (766). Bluebird. I did not see many Bluebirds at any point visited. A few, perhaps a dozen, were observed near the navy yard, March 23d, and two were noticed at Saint Joseph's, April 6th.

Close search and daily observation would have doubtless added several species to this list. Only three or four days and a few odd hours was I able to devote to the birds, the chief purpose of the stay at Pensacola being, as before stated, to make collections of the fishes of the region. The list I think is chiefly valuable as indicating the species which are most noticeable at that time and showing the species which migrate along that coast. All the evidence goes to show that these species, the Hooded, Pine, Black-throated Green, Sycamore, Parula and Tennessee Warblers, the Orioles, Summer Redbird, etc., either wintered in southern Florida (which few, if any of these species do) or reach the United States in spring, via the Florida Keys and south Florida.

Notes from Amherst, Mass.

June 25th, I took a Cuckoo which seems much like a hybrid between *C. erythrophthalmus* and *C. americana*. It has the bill and feet of the former and the wings are plentifully colored, both above and beneath, with the bright cinnamon of the latter. The ring around the eye was chrome yellow instead of orange-red, as in *C. erythrophthalmus*. The tail feathers, which the shot spared, lacked white entirely. The bird was badly shot, but I was able to save all the important parts.

June 29th, as I was wading in a thick marsh endeavoring to get a shot at a Bittern, I heard several shrill screams directly in front of me, and a bird about as large as a month old chicken appeared in a small open space in front of me and then vanished. A short time after another appeared and I shot it, and on picking it up I found I had shot a female Virginia Rail, a bird new to this locality.—H. L. Clark.

OÖLOGY.

J. PARKER NORRIS, Editor.

The Editor assumes no responsibility for those articles which have the names of the writer attached.

A Day With the Birds of a Hoosier Swamp.

BY BARTON W. EVERMANN.

Through the southern part of Carroll county, Indiana, flows a small creek called Middle Fork. Not far from where it is crossed by the Logansport and Terre Haute Railroad, it widens very much, spreading over considerable country which, in its upper portion, forms a large slough, covered with cat-tails and tall water-reeds and grasses, and devoid of timber. The western half is equally wide, but differs from the upper or eastern half in supporting besides a pretty dense undergrowth, a heavy forest of swamp ash, (*Fraxinus sambucifolia*) and soft maple (*Acer dasycarpum*).

Besides various other species of water plants, there are large patches of the yellow pond lily, (*Nelumbium luteum*), in occasional open spots. During the greater part of the year this maple swamp (as it is called) is covered with water from one to two or three feet deep. The current is scarcely perceptible, so it has much the nature of a large pond.

I had been told that "Big Blue Cranes," (*Ardea herodias*), nested in great numbers in this swamp. "Why," said the man who described the place to me, and who had seen it in winter, "the nests in the tree-tops look like small hay-cocks! I saw them plainly from the road as I drove by in my sleigh. I counted over a hundred of them." This was enough. I decided to visit that swamp at the proper time next spring; and on May 21, 1883, with two companions, I reached the swamp after a pleasant morning drive of ten miles. We drove our spring-wagon into a barnyard near by, put our horses in the stable, and dressed ourselves in our wading suits. Although it was late in May, yet we found the water very cold, and, as if to increase our unpleasant sensations, the bottom was very uneven, and we often suddenly stepped into holes deeper than any before; or our feet became entangled and we fell headlong into the water. And occasionally we found small areas of quicksand into which we were kept from sinking only by being able to catch hold of prostrate logs or other vegetation. Hardly had we entered the swamp when we saw a Great Blue Heron coming

toward us from northward. He was high in air when first seen, and was approaching the swamp with long, steady strokes of his mighty wings. But as he neared the margin of the forest he suddenly stretched his neck and legs to their full length, partially closed his wings and swooped downward with a whirring noise in a direct line for the top of a large ash, in which was a nest. While in this descent, no movement of wing or other member could be detected. I had often watched different species of hawks descend from great height in the same way, but had never before seen so long a bird as the Great Blue Heron perform the feat. I was anxious to note how the descent would end, so I watched the bird intently. When within but a few yards of the tree, he suddenly doubled up his neck close against his breast, let fall his long legs in a very awkward, dangling manner, spread his wings and beat the air with a few well-timed strokes until he was able to clutch the limb where he wished to alight.

We were soon among the trees which contained the nests, and during the day witnessed the return of many a heron from the fishing grounds to the north, and in every case the descent was made as I have already described, and each returning bird was received with loud croakings by those at home. But soon all became quiet except an occasional malcontent who, seemingly not satisfied with his lot, gave evidence of his discontent in spirited quarrelings with those about him. Then the return of another bird would put all in confusion again. We walked about among these trees and tried to estimate the number of nests which they contained, and, while we could not readily determine the number exactly, we counted over one hundred and thirty. Some trees contained but one nest, but there were usually several in each suitable tree. In one instance we counted twelve nests in one tree and they were all in use.

As these maples and ash were quite tall and were devoid of limbs for the first thirty to sixty feet, and as we had no "climbing irons," only rarely did we find one which I could ascend. With the aid of a long rope, however, I was able to reach a few of the nests. I here give my method of using the rope—a method which I have on many occasions found quite useful and satisfactory. To one end of the rope I tied a small, light, but stout cord one or two hundred feet long. To the other end of the cord I fastened a weight of convenient size. This I could throw over limbs at considerable heights, and could then draw the rope up over the limb. When this was accomplished I have found it not very difficult to ascend even very large and tall trees. In doing

so I would make use not of the rope alone, but of the tree also.

One of the trees I climbed on this occasion contained eleven nests, but most of them were so far out on the limbs that I dared not venture to reach them, but had to content myself by standing in the main top above them all and looking down upon the thirty beautiful eggs which they contained. The usual number to the nest seemed to be three, but several nests seen that day contained but two, and not a few contained four as the full nest complement. In no case did I find more than four eggs in any set. While the majority of the nests contained eggs, quite a number were filled with young of various sizes—some just from the shell, others almost ready to fly. In fact one young fellow that I tried to catch attempted to fly to another limb, missing which, he fell to the water below, his life paying the penalty for his rashness.

From all indications it is safe to say that as early as the middle of May the nesting in this locality is at its height.

But our day in the swamp was not devoted wholly to the Herons. These were not the only birds which make it their summer home. The Red-winged Blackbird, (*Agelaius phœniceus*), was there in great numbers and their nests were seen hanging in the tall reeds or resting in the crotches of the buttonwoods. The Crow Blackbird, (*Quiscalus quiscula*), next to the herons the most numerous and noisy bird found there, was feeding its young in the nests built in large knot holes, tops of snags, forks of trees, and even in deserted and decaying Woodpecker holes. The Redstart flitted across the open space like a flame, and we found its beautiful, fluffy nest with three handsome eggs in a small elm tree. The Maryland Yellow-throat hid in the coarse grasses along the edges of the marsh, and we felt sure its nest was there, though we did not find it. And in the thickets and haw-trees on the banks we found Doves, Catbirds and Brown Thrashers living together and rearing their young in peace and contentment. And with what a thrill of delight did we discover that this swamp was the breeding place of the Golden Swamp Warbler, (*Protonotaria citrea*). I had never before seen this beautiful bird alive and was delighted to find it nesting here in considerable numbers.

Shortly after entering the swamp I caught a glimpse of a rather bright-colored bird as it flew from a hole in a small dead snag not far away and disappeared in a thicket near by. In examining the snag to see what the hole might contain, I broke it off easily a few feet below the hole,

and, with my fingers, could feel the eggs in the nest. Not feeling sure that I knew the bird, I stood the snag up against a tree and awaited its return. I had not long to wait, for soon the bird, solicitous for its treasures, came by short flights toward the nest. After she had entered the hole I scared her out again, and with a light load of "dust," secured her for my cabinet. Presently the male came about and suffered a like fate.

The nest contained five beautiful fresh eggs. Later in the day several other pairs were seen and four more sets of eggs were secured. The nests were found occupying deserted Sapsucker holes in usually small rotten trees or saplings, and varied from four to ten feet from the ground. The first one found was about six feet from the ground, in a very rotten snag not over four inches in diameter. The shell left by the excavation of the hole was very thin, less than half an inch. The cavity was about four inches deep and was filled nearly to the top by the nest, which was composed almost entirely of some species of moss. All the other nests were similarly situated and constructed from similar materials.

The eggs which are now before me vary considerably in markings as well as in measurements. The ground color is an enamel white with quite a number of dull lilac spots which appear as if imbedded beneath the surface. Above these are numerous other large chocolate spots and blotches which are more or less confluent about the larger end, where they frequently tend to arrange themselves in an irregular ring, from which they decrease in number toward the smaller end. A set of four in my collection from Muscatine, Iowa, has the blotches perceptibly smaller and less pronounced, and more evenly distributed over the entire surface. In general shape the egg is an elliptical ovoid, tapering but slightly toward the smaller end. One set of five measures .75x.57, .73x.56, .75x.56, .70x.55, and .75x.57; another, .73x.55, .72x.55, .74x.54, .73x.55 and .72x.54; and still another, the Iowa set, .65x.55, .68x.57, .68x.54 and .71x.55. The first two may be regarded as typical sets from this State, while the other is lighter in color markings and considerably shorter or more elliptical than any I have seen from Indiana.

All the eggs we obtained were fresh or nearly so, and it is more than likely that but few, if any of the sets were completed. Most of those which were taken contained either four or five eggs each; others were examined which had from one to three eggs, and still others which were not yet completed. It thus seems probable that the full nest complement may be more than five, perhaps even six or seven.

Again on May 2, 1885, it was my good fortune to visit this swamp and learn more of this beautiful and interesting warbler. The season this year had been much more backward than when I visited the swamp before, and as a consequence, the *Protonotarias* had not yet begun laying. Several unfinished nests were found, but no eggs. On my first visit and when the birds were all mated and the females were busy with household cares, no song was heard, nothing but an occasional note of alarm when disturbed, which seemed much like the syllable *piph*, *piph*, uttered sharply and hurriedly.

But to-day even the pairing of the birds had not yet been settled, and many a combat between rival males did I witness. Near the centre of their breeding ground was perhaps half an acre of comparatively clear space, a pond, in fact, covered with a thick growth of water lilies. Standing near the edge of this, I would often see a couple of males dart by me and cross the open space or make the circle of the pond, the one in close pursuit of the other. Often they would cross and recross the pond, circle around its margin, and then dart off through the trees and disappear from view, only to return again after a time to repeat the same wild race. Sometimes the one was not always a coward, but stood his ground, when a fierce conflict would ensue, and frequently they would clinch and fall nearly to the water before letting loose. Often they would ascend in a spiral flight far up among the tops of the trees only to return to the pond again. And sometimes I would see a male flying alone in a slow fluttering way across the open space toward the place where the female was busy constructing the nest. His wings were bent downward, the tail spread so as to show the white very plainly, and as he flew he gave expression to his happiness in a somewhat excited but pleasing song. Once he perched upon a limb above me where he warbled forth a very pretty song which I listened to intently then and at other times, and tried to represent by syllables. I refer to my memoranda made at the time and find "*toue, toue, t'chee, t'whce, t'whce, t'whce, t'whce, t'whce, t'whce.*" The first two syllables are lowest and most subdued, the *t* being more prominent than in the other syllables which vary from six to eight in number and are uttered rapidly and with slightly increasing volume. The interval between the second and third syllables was longest, and I sometimes thought the syllables were uttered in pairs throughout. I have always been more less skeptical as to the possibility of correctly indicating on paper the songs of birds, for it is not so much the particular note

or order of notes which determines the character, which makes the melody of the song, as it is the cadence, the way in which these notes are made to blend or follow one another, and the quality or *timbre* of the note itself. I imagine that it would require a very skillful musician to imitate, even approximately, the song of any bird which he had never heard, if he were to depend entirely upon the syllable representations as given even by our best ornithologists. To test the matter I have often submitted such representations to various ones of my musical friends, always with laughable results. What is more painfully ludicrous than the attempted imitation of the Bobolink, as given by the average elocutionist. To him who has heard the delicious song of the happy bird such imitations are simply excruciating.

Eggs of the Roseate Spoonbill.

BY R. E. RATCHFORD, GRIGSBY'S BLUFF, TEXAS.

On June 2d we secured a number of sets of eggs of the Roseate Spoonbill, (*Ajaia rosea*). One nest contained seven eggs, and several had five and six in them. All, or nearly all authorities give three eggs as the number laid by this species, but our experience proves this to be a mistake. The identification was perfect, as birds were shot from the nest. The eggs vary much, both in size and shape, the ground color being white, more or less blotched with pale brown. The markings also vary very much, as some of the eggs are almost white, while others are thickly blotched.

[In Davies' new edition of his excellent *Nests and Eggs of North American Birds* he quotes from an article on "The Roseate Spoonbill in Florida Rookeries" that appeared in Vol. I of *Random Notes on Natural History*. The writer of that article found eight nests containing three eggs each, one with two eggs and one young bird, two with four eggs, and one with five.

A set of three eggs of this bird, collected by Mr. Ratchford, are before the present writer. They correspond to the average size for this species, and are beautifully marked with brown spots. Were it not for their elongated shape they could readily be mistaken for handsomely marked specimens of eggs of the Red-shouldered Hawk (*Buteo lineatus*).

Notwithstanding Mr. Ratchford's experience to the contrary, it is probable that three is the most frequent number of eggs laid by this species.—Ed.]

We understand that the fine cabinet of eggs owned by the late John Snowdon Howland of Newport, R. I., is arranged in the Natural History rooms, at New Haven, Ct., he having bequeathed them to that city.

Pleasant !

BY J. M. W., NORWICH, CONN.

It is pleasant, when we start out in April for the old haunts of the *Buteos*, to miss not only the birds and their nests but to find that the wood-chopper has been before us and the very forest itself has disappeared. But to this we must submit many times more at the hands of the improvident Connecticut farmer. Pleasant, too, it was, early this season, when returning for a set of *B. lineatus* which we had marked down, to find the completed set of four in the hands of a young brigand who held it for a king's ransom. But were our reflections really pleasant on the 1st day of April, when, after climbing sixty feet to a new and finely feathered nest of *B. borealis*, we found the clutch gone and a hen's egg substituted, bearing the legend APRIL FOOL. To avoid suspicion the practical jokers had raised a twenty-eight feet ladder against the tree, leaving no abrasions on the butt.

A young Norwich collector had a still livelier experience in mid-air near a farm house, April 24th, finding the clutch of *Buteo's* eggs covered by two unsprung steel-traps! After incubation begins, traps set in this way prove very murderous—both male and female hawks often being taken. I can well remember how pleasant it was, one May day, going through Lantern Hill woods, to see a big set of *fourteen* Wood Duck's eggs in the hands of a farmer, deaf to the demands of science, who proposed to put the eggs under his old Dominick and take the ducklings to the county fair! It was pleasantly exciting to chase all around a factory village after a stolen set of Fish Hawk, securing it finally after a raid on three different hen coops. It is very consoling to know that my 1886 set of Mottled Owl is at this moment addling under a Seabright bantam in this goodly city of Norwich.

Yes, these and kindred field experiences are pleasant, but they are not exactly joys forever. So I will cite but one more "pleasing instance." It was with a comparative degree of pleasure last May that I found out that a trout fisherman had taken a set of my Marsh Hawks' eggs, but it was not superlatively pleasant in June to see this finely marked clutch all be-smirched and nest-stained under a barn-yard fowl. The fisherman had told the farmer that he had found five eggs of the Dusky Duck. At the moment I sincerely wished the eggs would hatch, the young hawks mature and eat up in detail all the poultry on the farm. Perhaps it was to equalize this set-back, that the same season I took three sets of eggs

from one Harrier, and the season before three more sets from the same bird—twenty-three in all.

I am inclined to think there is little to be gained placing the eggs of *Raptores* under our domestic fowls. The late Dr. Wm. Wood, of East Windsor Hill, said I was the only pseudo-naturalist who had helped him to find the true period of incubation of our Kapacious birds; the text books were all guess work on this point, he claimed. I sent him at various times sets of Barred Owl, Cooper's Hawk, and Red-shouldered Hawk; and whether under fowls or in incubators, the eggs all addled, with the exception of one Red-shouldered Hawk, which chipped the shell in twenty-nine days. But was this a crucial test?

The Number of Eggs Laid by the Red-tailed Hawk.

BY J. W. PRESTON, BAXTER, IOWA.

In late numbers of the ORNITHOLOGIST AND OÖLOGIST there have appeared several references in regard to the color of eggs of the Red-tailed Hawk, (*Buteo borealis*), and the number of eggs in a set; therefore perhaps a few extracts from my field notes may not prove uninteresting.

In a number of years collecting I have taken no fewer than seventy-five sets of eggs of this species, and examined many more, mainly from central Iowa. In this large series I have found but five sets of two eggs each, two having four each, and all the others contained three eggs each except one, which had but one egg—well incubated.

In four instances the sets showed one egg entirely unmarked, while the other two were richly marked. About one third of the sets have been light colored, the very large proportion being of a bold, heavy pattern. I have usually found the ground color to be a light green, or greenish white, in fresh specimens, but fading after a few day's incubation. The rich brown spots also fade to some extent. This, I believe to be also true of the eggs of many species of hawks, especially noticeable in the case of those of the Marsh Hawk, (*Circus hudsonius*), where the fresh egg is a beautiful light green, but it fades to dull white within a day or two.

[It is probable that most of the readers of the ORNITHOLOGIST AND OÖLOGIST will fail to agree with Mr. Preston that the typical clutch of eggs of the Red-tailed Hawk is three. Two is much more commonly the number. In a series of twenty-seven sets before the present writer, (collected in Pennsylvania, Connecticut, Iowa, Texas, and Mississippi,) there are nineteen sets of two eggs, six of three, and two of four. Mr. F. H. Carpenter has a series of thirty-six sets of two each, collected in Connecticut, Massachusetts and New York; and "J. M. W." writes that "the clutch of *Buteo borealis* is two."—Ed.

Curious Nesting Place of Nighthawk.

On June 10th, 1886, a Nighthawk, (*Chordeiles popetue*), was found sitting on two eggs on the pebble roof of a dwelling house, on Spruce street, above Twentieth street, Philadelphia. This is right in the centre of the city, where it is closely built up for miles in all directions. The eggs were laid on the pebbles, without any attempt at forming a nest.

Eggs of the White-tailed Hawk.

Mr. Thomas H. Jackson, of West Chester, Pa., sends the following description of a set of two eggs of the White-tailed Hawk, (*Buteo albicaudatus*) in his cabinet:

"They are decidedly pyriform in shape, and one of them much more so than the other. Color: grayish white, faintly clouded with shadings of purplish brown. No. 1 has a few streaks of dark brown over and near the greater end; but No. 2 has no well defined spots other than a few that are evidently weather stains. The surface of the shell is rather smoother than usual in eggs of the *Buteos*. No. 1 measures 2.20x1.80 and No. 2 is 2.35x1.82.

"They were collected on April 18, 1884, at Corpus Christi, Texas, by J. P., for E. D. Drown. The bird was shot, and the eggs were fresh. The nest was in the top of a 'Spanish Dagger' bush (*Yucca aloefolia*) 7 feet 6 inches from the ground."

For description of another set of the eggs of this hawk, see ORNITHOLOGIST AND OÖLOGIST for January, 1886, p. 11.

Nesting of the Yellow-rump Warbler.

BY WILLIAM L. KELLS, ONTARIO, CANADA.

This species, (*Dendroica coronata*), is but rarely observed in this section of the country, though owing to its peculiar habitat, and comparative silence, it may be more common than I am now aware. It is well known to every field ornithologist that each of the species of Warblers have their peculiar haunts, and but few of them intermingle in the same society, and when they meet they evince a jealous rivalry that soon causes each to understand that there can be no love between them, and that their ways are not in harmony. Sometimes, however, in a small circle, a number of species may be heard intermingling their joyous songs together. In the same thick underwood may be found the nests of the Red-start, (*Setophaga ruticilla*), and the Chestnut-sided Warbler, (*Dendroica pensylvanica*), but that of the former is always more elevated than the

latter and generally deeper in the wood. So in the same swampy woodland the Yellow-rump and Bay-breasted Warblers, (*Dendroica castanea*), meet on common ground; but while the latter glean and warble high among the foliage, the former confine their haunts near to the ground, where they may meet in society the Black-and-White Creeper, (*Mniotilta varia*), and other members of the same family; and as with the birds themselves, so with their nesting places. I have seen but few nests of the Yellow-rump Warbler, and but one with eggs. On the 8th of June, 1882, I discovered, for the first time, the nest of this species. It was in a low black-ash timbered wood, where there was an intermingling of low balsam and cedars, and near where I had taken a nest of a Bay-breasted Warbler the season before, and of whose nest I was now in search, when I espied in a low balsam about four feet from the ground, a nest much like in material, form and position, that of a Chipping Sparrow, (*Spizella domestica*). The bird was seated on the nest, but flew off when I was within a few feet, and from a position near by anxiously watched my movements, at the same time moving uneasily and uttering a few "chip"-like notes. I also carefully noted her plumage, and became certain of her identity as a Yellow-rump Warbler. The nest contained four fresh eggs, which I took, and they have since been in my collection. It is composed of small stalks of dry weeds, rootlets and hair. The eggs are clear white, mottled on the large end with spots and blotches of light brown. In size, form and color they much resemble the eggs of the common Yellow Warbler, (*Dendroica aestiva*), while the nest can scarcely be distinguished from that of a Chipping Sparrow. I also saw near by an old nest of the previous year, but have since failed to find any nest in that place.

Capacity of Eggs.

BY WALTER HOXIE, FROGMORE, S. C.

Ten measurements of the capacity of the eggs of the Red-winged Blackbird show an average of .298 cubic inches. Variations from the mean, but little more than five per cent.

Brown Thrush, the same number, .292 cubic inches. Variations, less than four per cent.

Boat-tailed Grackle: .525 cubic inches. Variations, more than thirteen per cent.

I find I can obtain results with least error by displacement of water by overflow into a small glass tube. Will not some reader of THE ORNITHOLOGIST AND OÖLOGIST try a little work in this line.

THE
ORNITHOLOGIST
—AND—
OÖLOGIST.

A MONTHLY MAGAZINE OF
NATURAL HISTORY,

ESPECIALLY DEVOTED TO THE STUDY OF

BIRDS,

THEIR NESTS AND EGGS.

DESIGNED AS A MEANS FOR THE INTERCHANGE OF NOTES
AND OBSERVATIONS ON BIRD AND INSECT LIFE.

FREDERIC H. CARPENTER, Editor,

REHOBOTH, MASS.,

FRANK B. WEBSTER, Publisher,

409 WASHINGTON, ST., BOSTON, MASS.

Editorial.

We notice that several States in the Report of their Commissioners of Agriculture, have embodied notes more or less complete on the bird-life within their limits. We wish that all of the states might do likewise, as the information given through such documents meet with a ready appreciation by a very observing class of people, and the benefit would be mutual. The ORNITHOLOGIST AND OÖLOGIST will be pleased to assist in any possible manner such an arrangement between the commissioners and representative ornithologists of the various states.

Our personal friend, Dr. Arthur LeMoyné, has just returned from the mountains of eastern Tennessee, where he has spent four months in observing the ornithological features of that region. As the Doctor is an experienced ornithologist his account of bird life of that country will be very interesting. We shall commence the series in our next issue. The country which he visited has never been fully investigated. Mr. Wm. Brewster gives in *The Auk*, Vol. III, Nos. I—II the best account thus far, although his time was limited to twelve days.

Apropos of the scarcity of birds in certain localities, we would suggest a feature which has not been mentioned, viz., the advance of settlements into the wilderness and the change of bird life. As an illustrative instance we quote the American Robin, (*Merula migratoria*.) Several years ago before the clearing of the forests along the Dead river, in northern Maine, none of this species were seen, while in 1883 they were nesting commonly along the banks of the river. Such is also the case about many of the lakes, and the recent occupation of this new territory must necessarily mean a drawing off from some other former nesting place. We would like to note such faunal changes from others if it has been observed.

The Society for the Prevention of Cruelty to Animals have stationed an officer on Muskeget Island, to prevent the shooting of the Terns, or the taking of their eggs. It is an exceedingly humane and well timed movement, and for the good of the cause, we advise that no discrimination should be made to "association" scientists. Should the rumor we have heard prove true, we shall show to the public this partiality and its consequent violation of law.

My Rose-breasted Grosbeak "Jack."

As "Jack's" life history has been written in O. and O. there may be some reader that would like to know that he is still healthy and in beautiful plumage singing as hard as ever and commenced earlier this year than usual. He will be eight years old in July. He shows age only in the night when his head hangs down, and once in a great while he will drop from the perch, but he flies back quickly. The late Dr. William Wood used to say that he never knew one to live over two years in confinement. Jack's ways are as interesting as those of any trained parrot.—J. M. Wade.

BALD EAGLES. The emblem of our country still occurs in New England to a limited extent. Three have been shot within the past week. One at Hazen's Mills, N. H., another at Kingfield, Me., and the third in Mass. No matter how grand he may appear when alive, or how useless when dead, this noble bird is shot at every opportunity. A procedure to be lamented.—D. P. L.

PRACTICAL TAXIDERMY.

BY FRANK B. WEBSTER.

CHAPTER XII.—DECORATIONS.

[In publishing these articles on Taxidermy all rights are reserved for future publication in book form.]

The art of furnishing the stands or mountings for preserved specimens is apt to be too much ignored by taxidermists, and is perhaps in part owing to the entirely wrong custom of charging for stuffing the subject only, and throwing in the stand, on the chromo inducement plan. Frequently more time is actually devoted to making the branch than in stuffing the bird, and in the valuation it should be duly considered. The material required is as follows: Moss, rock-lichens, the flat greenish-gray growth, seen on old stone walls, form an important item. It should be gathered on a damp day, when it can be easily removed. When thoroughly dried break it up fine and mix enough of the green French moss to brighten it. This is the moss used in making branches. The fine, light-colored moss found in fields, finely broken and mixed with the other gives a variety. The long fibre tree-moss found on trees in swamps and near the coast is useful in decorating the branches to give a finish, and also for stumps. The little red top and all other varieties should be collected. Mica sand and various others, obtained by pounding up rocks and fancy smalts, are used in rock work. Papier maché—which is paper in the pulp, dried—is used for covering, and is prepared as follows: Let it soak till soft, (it is superior to paper as it has no grain,) when soft add a thin solution of glue; place it on a fine sieve and let it drain till quite free from water; mix flour with it until it is sticky. It is then ready for use. Some color by mixing dry umber, while others prefer to paint it when dry; and still others mix ashes with it. A good assortment of old roots, obtained from dead trees in swamps—the soft rotten brown ones and the bleached cedars should be sought after. In fact, the finest and most valuable stumps are some of these choice natural ones. These with a few principles to work upon, will produce a variation of results as great as the imagination.

We will first consider the moss branch. The wire for the main br. must be selected stiff enough to hold the bird; the others may be lighter. For a bird the size of a robin, the main wire should be about No. 16, and the next 18, the small ones 22. The wires should be cut one or two inches longer than the length of the branch required, so as to leave the end to fasten by. For

our bird we cut the main wire 14 inches, the second 6 inches, and the three small ones 3 inches. Next take the medium stuffing tow, draw it out in pieces longer than the wires; for the largest let it be about as thick as the finger and, say 18 inches long, and the others in proportion. The glue for this purpose should be about as thick as the contents of a hen's egg. If too thin it will cause trouble by not holding the moss in place. Apply a coat of glue to the wire that is to be covered, (leaving the fastening ends). Beginning at the end apply the tow by twirling the wire with the right hand and following the tow down with the left—the tow can be firmly twisted on it, the glue holding it in place—serving each wire in the same manner till all are completed. Two sets of rolling boards are required, which should be two pieces, one for table, say 8x15 inches, the hand piece 4x12. One set is for rolling in the glue, the other for rolling on the moss. Now take the covered wire, give the tow a coat of glue and then roll it once or twice, being careful to roll the right way so as not to untwist the tow. This will work it into the fibres and it will have a less tendency to come off. Next roll this tow-covered glued wire in a tray of the fine moss and then roll it well between set number 2 of the rolling boards. It is well to let the branch stand a minute or two before giving this last rolling. We now have the straight moss branch; it should



taper. If the first winding of tow is not large enough a second one can be added by gluing and winding in the same manner as the first.

Next take a piece of pine (not too smooth, say about 5 inches square, or a turned one of the same diameter; taking one of the old roots, cut off a piece 2 inches long and fasten it to the center for a stump. Give the surface, or one-half of it, a coat of glue and cover this glued part



Fig. 2.

with mica sand; press it with a block so as to force the larger grains of the sand into the glue. If this is not done, only the finest will adhere. Next coat the other part with glue and treat it in the same manner with moss. (At the present time, it is a sad fact, nothing is offered as a better substitute for grass.) Our stand now represents both ground and grass, with a

natural stump. Next make a hole close to the stump, pass the wire end of the large branch through it drawing it down firmly, clinch it on the bottom; take the next larger branch, and about 3 or 4 inches from the base pass the wire through the large branch and twist it around it in like manner as the others. One branch now appears. (See fig. 2.) Next twist the branches

in desired shape, with glue and moss, cover the wires that show; fasten leaves by twisting the stems to the branch, add a few fern leaves to the base, perhaps some dried grasses, and finally a little of the tree moss, &c., and we now have our moss branch complete and ready for use. It will dry soon and then cannot

be easily changed. (See fig. 3.)

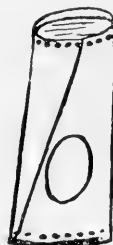
A smooth branch that for a time remains flexible can be made as follows: After winding as for a moss branch, give the tow a good thick coat of glue colored with burnt umber and a little glycerine added. When dry it is ready for use. I have seen very nice branches that were made by covering the wire with cloth instead of tow, but the process must be much longer.

STUMP WORK. Very fine stumps can be cut from old roots. They can be mounted on artificial bases as described above, or the bottom can be sawed off square and no other stand used. Artificial branches can be fastened to them. They can be partly bronzed, and the effect of rubbing in various fragments is very striking. The tree, and other mosses can be stuck to them.

PAPIER MACHÉ STUMPS. The papier maché should be used as a *covering only* for ordinary stumps. Cut natural sticks say from 1 to 3 inches in diameter, and in the required lengths. Cover a large board with stiff paper and glue the stumps to the paper, distances apart enough to admit of working between them; give them a coat of glue and then mould them in shape with the papier maché prepared by the receipts. Knots, irregularities and the grain of the bark should be made. When dry they can be painted or stained, if the papier maché has not already been. They can then be torn from the paper and are ready for use. If they are made on the board without the paper it will be found very difficult to remove them.

HOLLOW STUMPS can be made as follows: Cut

two pieces of wood, one for the bottom and one for the top, nail cardboard or strong paper around it in cylinder form and where an opening is desired cut it through the paper. Give the outside of the paper a coat of glue and then cover with the papier maché, and moss branch added.



When a number of birds are to be mounted together a tree is required, which may be made as follows: It is best in this case to build on the permanent base. Cut a dozen or so wires, about number 16, and fasten them in a circle to the centre of base or where the trunk is wished; bring the tops together in lots of three where the main branches are wished and wire them in place.



Cover the wires with tow and give it a good coat of glue, then the papier maché. The moss or flexible branches can be fastened to the end of the wires, and the places where joined patched with moss. To prevent too much of a contrast the lower parts of the branches should be touched with burnt umber and moss stuck to the papier maché part. Except in the simple single branch, I consider it best to make the branch or

tree after the specimens are ready for them—animals being the exception.

Rock work. Peat, although not in general use in this country, I think in time may be. In England it is offered by dealers, in rough cakes. It is light and can easily be cut in desired shapes and can be painted. I have seen rocks made from it by Prof. Yeoman of New York, that were truly wonderful. Cork is used for small pieces, but the objection to it is the cost.

For small pieces I would recommend making the form of excelsior, coating with glue, then paper (common newspaper), and then the papier maché. Cover it with sands. Some do it before the papier maché is dry, others with glue after dry. For large pieces—for animals such as foxes,

or for scenery, build the frame of wood, arranging to have the wood come where the leg wires are to go in. Fill in with excelsior and tack two or three layers of thin cloth over all. Give it several coats of glue, produce the irregularities with papier maché and then sand and paint to suit taste.

ICEBERGS and snow scenes can be made on the same plan. Paint (receipt given in previous chapter), and use plaster of paris, glass frosting and mica snow. Powdered burnt alum can also be used. Icicles can be obtained from any dealer, and grass immersed in strong alum water will, by the alum adhering, have a decided winterish appearance. If a scene made by this causes a shiver in July it may be considered a success.

List of Birds Observed in the Vicinity of Santa Barbara, Cal., During the Year 1885.

READ BEFORE THE SANTA BARBARA SOCIETY OF NATURAL HISTORY.

BY CLARK P. STREATOR. PART IV.

(The nomenclature is that of the Smithsonian Check List, by R. Ridgway, 1881.)

Uria columba, (Pigeon Guillemot). Common on the islands. Breeds. Never saw any on the main land.

Lomvia troile californica, (California Guillemot). Rather rare.

An additional list of the land birds observed since February 1st up to date (May 12th,) will include the following:

Sialia arctica, (Arctic Bluebird). Very rare. I have only collected one specimen.

Vireo solitarius cassini, (Cassin's Greenlet). Rare. A few seen this spring.

Contopus borealis, (Olive-sided Flycatcher). Have seen this bird only once.

Selasphorus allenii, (Allen's Hummingbird). Common summer resident; more abundant than *S. rufus*.

Passerella iliaca unalascensis, (Townsend's Sparrow). Saw one individual of this species on Santa Cruz I., last March.

Buteo lineatus elegans, (Western Red-shouldered Hawk). Not common. I have seen only three specimens of this beautiful Falcon.

Buteo swainsoni, (Swainson's Hawk). Common. Probably a resident bird.

I desire to correct an error in my list in the May issue of O. and O. I have there given *Empidonax hammondi*, (Hammond's Flycatcher) as a "common summer resident"; it should be *E. dy-*

ficilis, (Western Yellow-bellied Flycatcher), but as Hammond's Flycatcher has been found in different parts of California I expect it may occur here. I have seen at least a dozen species of birds which I have not been able to secure, and therefore could not identify, but as fast as I am able to do so they will be reported in these columns.

Migration of the Coot.

BY W. C. AVERY, M. D., GREENSBORO, ALABAMA.

A fact, relative to the migration of the Coot, (*Fulica americana*), known here by the French name, Poule-d'eau, may, perhaps, be worth recording. About the middle of April, 1885, as I was going out of the house, at sunrise, my attention was attracted to a bird sitting within a few feet of the porch. It proved to be a Coot. Instead of trying to escape, as any other bird would have done, when I extended my hand to catch it, the poule-d'eau showed fight. I confined it in a chicken-coop in the yard, and supplied it with some corn-bread and water. If it ever ate or drank while in my possession, I was not aware of the fact. It took, to my knowledge, neither food nor water. It seemed to spend every minute of the day and night in perpetual motion. Its efforts were not in vain.

"*Omnia vincit improbus labor*," was, doubtless, the motto of my prisoner. By thrusting the head and neck through every opening within reach, the restless bird at last forced off a slat and recovered its freedom. On the third day after it had been placed in "durance vile," I saw it standing on top of its prison pluming itself. I advanced towards it, expecting to capture it again. Imagine my surprise when it rose on strong pinions, flying high and going in a northerly direction, as far as I could see it. This was not the first time that I had seen in the spring this, to me, apparently silly bird offering battle to its captor. I had believed that "coot" and fool were justly synonymous.

The coot has been slandered; it does not fly because it cannot fly. Not because it wants the sense of danger, but because it has not the power to escape, does it allow itself to be taken, when it drops exhausted, on its long migratory flight, and rests till its tired wings have recovered strength to bear it onward.

ALBINO ROBIN. A neighbor of mine has in confinement a robin, pure white, pink eyes. It was raised from the nest and has never had any stage of plumage save the white. Perhaps the reason of this plumage could be traced to deficiency in the egg.—D. F. L.

Spring Migration at Raleigh, N. C., in 1886.

PART II.—APRIL MIGRANTS—LAND BIRDS.

BY C. S. BRIMLEY.

The warm wave of March 24th and 25th brought us the first of our regular summer visitors, viz: Blue-gray Gnatcatcher, one of which was seen March 25th, and five next day; while on the 27th B. and W. Creeper, Yellow-throated Warbler, Black-throated Green Warbler, and Large-billed Water Thrush were observed. Maryland Yellow-throat came on the 29th, Blue-headed Vireo on the 30th.

The next week was marked by little in the way of fresh birds, the only arrivals being White-bellied Swallow and White-eyed Vireo on April 2d, but a good many of our winter birds left us, namely, Phoebe bird (3d), Song Sparrow (5th), Snowbird, Grass Finch, Golden Crown Kinglet and Brown Creeper on May 8th, while on April 1st a White-rumped Shrike was seen, this being the latest date at which I have seen one in the spring. The second week in April was only marked by the arrivals of the first specimens of the following birds, the bulk of which, however, did not arrive till much later: Rough-winged Swallow (6th), Barn Swallow (7th), Blue Yellow-back (8th), Towhee and Redstart (10th), and Whip-poor-will (12th). On the latter date the last Field Larks, Winter Wrens and Cowbirds were seen—the latter bird though having apparently left us on March 19th, having been commoner than ever from March 27th to April 1st; indeed a flock seen on March 26th contained more Cowbirds than I had ever seen before in one flock, and must have numbered one or two thousand.

During all this time there was no one night of decided movement, but the birds seemed to arrive in twos and threes nearly every day, apparently regardless of both the weather and change of temperature, neither did any species become at all common until April 12th, when Maryland Yellow-throat and White-eyed Vireo were present in some numbers.

For nearly a whole week, from April 12th to 18th, there was no movement at all observed among the birds, but on April 18th a single Yellow-throated Vireo, the only one of the season, was taken, and a single Wood Thrush was seen next day. The night of April 19th, however, was marked by the most decided movement of the year. Wood Thrushes, Red-eyed Vireos, Summer Redbird, Hummer, and Hooded Warbler came and Maryland Yellow-throats, Yellow-

rumps and White-eyed Vireos increased to their full spring numbers. Swifts came April 21st, Great-crested Flycatcher and Prairie Warbler next day, and Bee Martin and Orchard Oriole on April 23d, while Hermit Thrushes left April 20th, and the last Ruby-crown was seen April 22d. On the 24th, Redstart, Red-eyed Vireo, Towhee and Blue Yellow-back were present in full numbers; Wood Pewee and Catbird arrived and a single Worm-eating Warbler, the first I have seen in this locality, was taken; the same day a Summer Yellowbird was seen. April 29th Chats arrived and were tolerably common next day; Catbirds and Brown Thrashers also became common at the same time, the latter bird having been merely occasional till then, though I have known it common by April 2d in former years.

Chestnut-sided and Black-throated Blue Warblers, Golden-crowned Thrush and a single Red-headed Woodpecker were also seen on the 27th, and Chuck-wills-widow was heard the day before. On the 28th the first Blue Grosbeak of the season, an imperfectly plumaged ♂ was obtained and several Indigo birds were seen. On April 30th a Long-billed Marsh Wren and three Scarlet Tanagers, both rare birds here, were taken, and on May 1st the first Olive-backed Thrush was observed.

On May 3d, Purple Martin and Acadian Flycatcher arrived, Golden-crown Thrush became common and a Scarlet Tanager with small scarlet wingbars was taken; next day Bobolinks came and Black-throated Blue Warbler became common. Water Thrushes came the next day and were common by the 7th. Black-polls came May 5th and were common on the 12th, while the last Yellow-rumps were seen May 8th, up to which date they had been quite common, evidently leaving us in a body at that time. "Bullbats" have been scarce this spring, the first being seen May 5th, and only one or two since, while our latest migrant, the Yellow-billed Cuckoo, arrived May 10th.

Only one more feature of the migration remains to be noticed, and that is the appearance of Cedar Birds in great numbers, from May 11th to May 29th. This makes the fifth year they have occurred in some numbers about the end of May or early part of June, though they have never been quite as numerous before. This about closes the record of migration this year, all the migrants having now (May 31), left us, and other birds settled down to summer numbers.

Shore and Water Birds: Snipe left us about April 9th (a single specimen was however seen April 29th), the bulk of the Killdeer having de-

parted for the north nearly a week before, (April 3d), a few, however, staying to summer with us as usual.

Of Sandpipers, a single specimen each of Pectoral Sandpiper (April 2d,) and Least Sandpiper (May 20th,) have been taken, while the migration of our two regular species has been as follows :

Spotted Sandpiper. First seen April 9th, and not again till April 16th, after which they were seen daily, but never many at a time, the largest number seen being about a dozen on April 28th. They continued to be seen daily till May 17th, after which date they became only occasional and were last seen May 29th.

Solitary Sandpiper. First seen April 29th, only quite scattering in its occurrence this year. Was commoner than the preceding species in 1882 and 1885, and is the only Sandpiper I have so far observed in the fall. Last seen May 17th.

Several Great Blue Herons were seen from March 26th till April 9th, but none since; while the Green Heron was first seen April 1st, next seen April 17th, and from that time till now has usually been present in suitable localities.

Two Sora Rails killed April 6th, and a ♂ Summer Duck seen on May 6th, complete my record of migrations this spring.

Dates of the Arrival of Migratory Birds in the Spring of 1886, Central Park, New York City.

BY A. G. PAINE, JR.

The nomenclature is that of the A. O. U. Check List.

March 2, *Passerella iliaca*, (585). Fox Sparrow.

March 6, *Agelaius phoeniceus*, (498). Red-winged Blackbird.

March 6, *Quiscalus quiscula*, (511). Purple Grackle.

March 7, *Melospiza fasciata*, (581). Song Sparrow.

March 7, *Merula migratoria*, (761). American Robin.

March 7, *Spinus tristis*, (529). American Goldfinch.

March 13, *Spinus pinus*, (533). Pine Siskin.

March 13, *Scolecophagus carolinus*, (539). Rusty Blackbird.

March 15, *Ampelis cedrorum*, (619). Cedar Waxwing.

March 15, *Sialia sialis*, (766). Bluebird.

April 1, *Sayornis phoebe*, (456). Phoebe.

April 10, *Turdus aonalaschkei pallasii*, (759b). Hermit Thrush.

April 10, *Dendroica palmarum hypochrysea*, (672a). Yellow Palm Warbler.

April 12, *Dendroica vigosii*, (671). Pine Warbler.

April 12, *Molothrus ater*, (495). Cowbird.

April 14, *Ceryle alcyon*, (390). Belted Kingfisher.

April 20, *Dendroica coronata*, (655). Myrtle Warbler.

April 24, *Harporhynchus rufus*, (705). Brown Thrasher.

April 24, *Mniotilta varia*, (336). Black-and-White Warbler.

April 27, *Pipilo erythrophthalmus*, (587). Towhee.

April 28, *Tachycineta bicolor*, (614). Tree Swallow.

April 29, *Chelidon erythrogaster*, (613). Barn Swallow.

May 4, *Chatura pelagica*, (423). Chimney Swift.

May 4, *Dendroica aestiva*, (652). Yellow Warbler.

May 4, *Dendroica virens*, (667). Black-throated Green Warbler.

May 4, *Vireo flavifrons*, (628). Yellow-throated Vireo.

May 5, *Galeoscoptes carolinensis*, (704). Catbird.

May 5, *Turdus mustelinus*, (755). Wood Thrush.

May 5, *Sciurus aurocapillus*, (674). Oven-bird.

May 5, *Setophaga ruticilla*, (687). American Redstart.

May 5, *Compothlypis americana*, (648). Parula Warbler.

May 5, *Nycticorax nycticorax naevius*, (202). Black-crowned Night Heron.

May 6, *Habia ludoviciana*, (595). Rose-breasted Grosbeak.

May 7, *Dendroica castanea*, (660). Bay-breasted Warbler.

May 9, *Turdus ustulatus swainsoni*, (758a). Olive-backed Thrush.

May 9, *Dendroica maculosa*, (675). Magnolia Warbler.

May 9, *Dendroica pensylvanica*, (659). Chestnut-sided Warbler.

May 9, *Seiurus noveboracensis*, (675). Water Thrush.

May 9, *Helminthophila ruficapilla*, (645). Nashville Warbler.

May 9, *Geothlypis trichas*, (681). Maryland Yellow-throat.

May 9, *Vireo olivaceus*, (624). Red-eyed Vireo.

May 9, *Vireo gilvus*, (527). Warbling Vireo.

May 10, *Dendroica caerulescens*, (654). Black-throated Blue Warbler.

May 10, *Icterus galbula*, (507). Baltimore Oriole.

(To be concluded.)

ENTOMOLOGY.

WRIGHT & BATES,
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ASSOCIATE EDITORS.

Address all communications for this department as above.

Seasonal Notes.

Now is the harvest time of the entomologist and we hope that our readers will improve their opportunities and report progress. The air is alive with insect life everywhere, and there is plenty of work to do. Several species of Sphingidae have made their appearance and by the time this number reaches you the family will be well represented. Most of them can be taken on the wing only in the evening and early morning, but a careful search of the fences, trunks of trees, and in fact any place that will furnish a resting place for them to dry their wings will frequently be rewarded by beautiful specimens fresh from the chrysalis. When such are found, do not pin them too quickly, as the moisture is apt to ooze out around the pin and stain the plumage.

Many of the butterflies have arrived, and in fact, all the families of the Lep. are well represented.

Coleoptera are quite plentiful and will be until late in the fall. Even then many species may be taken in their winter quarters.

We would advise collectors to pay more attention to the rearing of larvæ, especially of Coleop. It will require considerable care and patience but you will be well repaid for your pains. In addition to getting your specimens perfect, you will enjoy watching the changes during the numerous moults and transformations. We have raised quite a number of Lepidoptera and Coleoptera in our vivariums. Amongst others some *A. Cynthia* raised from last spring's moths.

The main point in rearing larvæ is to make all the conditions—food, locality and surroundings—as natural as possible and protect them from their numerous enemies, both parasitic and insectivorous. Take all the larvæ you can find as also the eggs and chrysalides. Keep them well supplied with their natural food and keep it as fresh as possible. If a larva has become accustomed to any special food, do not try to make it change even though the substitute might be considered a more natural food than the one it selected. Such attempts are almost invariably failures. Make notes of dates, locations and conditions of capture, appearance and peculiarities, in fact everything that will tend to enable you to recognize the species in any of its stages from the egg to the perfect fly.

Insect Mimicry.

BY A. W. P.

No fact set forth by insect hunters has more thoroughly excited the contempt of the incredulous for entomology and entomologists than this one of mimicry as a means of self protection to insect life. For years I was a faithless reader of what I deemed a theory rather than a fact, and wondered how such absurd conclusions could find endorsement anywhere. I was aware that certain insects did escape their pursuers by hiding upon the bark of a tree which found its counterpart in the color of their wings and body, or upon dead leaves or among twig debris in the woods from a similarity of color or form, but this I regarded as an accident or design of nature, rather than something to be credited to the effect or design of the insect itself.

On May 30, 1884, I was converted by a female sulphur butterfly, to insect mimicry as a fact. It was a cool day and so breezy that butterflies could take no pleasure upon the wing, but were forced to seek shelter. In a bed of pansies I noticed this female *Colias philodice* clinging to the lower striped petal of a light yellow pansy. I was with two friends within ten feet of the flower. How I came to notice the butterfly I do not know, for its wings were folded over its back and the black borders pressed together appeared to the eye like one of the dark lines of the petal upon which she sat. I was astonished at the success of the performance, and fearing that I might be observing and accepting more than there was any reason to, from the circumstance, I called the attention of my friends to the flower, which I readily pointed out to them, and said, "Can you see a butterfly upon that pansy?" They scanned the flower closely and replied, "There is no butterfly there!" I rejoined, "I think there is. It is a capital piece of mimicry, and I wished to see if it were possible for you to discover it!" They looked again, and although plainly told that the butterfly was poised upon the lower petal of the pansy, declared, "You have imagined it," and would not believe it, when before their eyes I walked to the pansy and to their astonishment took the butterfly from the lower petal, as designated.

My friends were astonished, and we all then and there took our first lesson in insect mimicry, and it was a most convincing one.

As a further proof of insect mimicry, I have noticed, when examining an infested leaf, that the minute *Aphide* would congregate upon a portion of the leaf which harmonized in color with themselves.—F. H. C.

Do Beetles Emigrate.

BY L. E. HOOD.

Several times during my experience as a collector, I have noticed certain species of beetles flying under circumstances that led me to believe they emigrate for the purpose of improving their condition, their former locality proving inadequate for their maintenance; this emigration being often voluntary, but sometimes compulsory owing to continued drought, floods or fires, thus depriving them of the necessities of existence.

In the limited space at my disposal I cannot enter this question as I wish, but will briefly state the reasons for my idea.

On the 28th of last June, I was in Malden, Mass., and as I came to the end of Summer street, where it branches up into the woody hills, I saw a large number of *Cicindela 6-guttata* flying before me, the ground was fairly alive with them where they were evidently resting, for, while I was getting my net ready for what I hoped would be a rich harvest, a wagon was driven past and I saw the last of them as they flew off over the trees, every beetle heading one way.

After my astonishment was over I found a few scattered about, but I doubt if they belonged to the flock that had disappeared.

I returned to Malden the next day, but found only a few, and, upon going into the woods to a former good locality for this species, I found the place submerged by water from the overflow of a brook, and the question came to me, did the specimens of the day before come from this locality, if so, where were they bound and why did they go together as if guided by some one who knew a place suitable to live in?

While in Connecticut some years ago, I saw one day, near the Thames River, a number of asparagus beetles flying in an easterly direction. A friend who owned a farm near by told me he saw them rise from his bed of asparagus, which had become badly wilted.

It would appear that, becoming disgusted with the meanness of their food, they had started in a body for more congenial grounds.

Mr. A. E. Hill, formerly of Springfield, Mass., was with me one day when we noticed a score of water beetles fly from a brook fast drying up, and settle on a fresh pond not far away, where they were sure of plenty of water.

Take note that these were not chance flyings, but that the beetles were in compact bodies, all flying in a certain direction as if knowing exactly where they were going. Is it instinct, or do they send out scouts to find and guide them to a pro-

per place? It would seem from the regular course they take that they have leaders, and I could relate a number of cases among other orders, but will only note one or two instances of beetles here.

The next case is one of compulsion and shows how keen they are sometimes, when great danger is upon them.

A fire started one evening in a meadow where the flames found plenty to feed upon in the dry grass and weeds scorched by the hot sun. The fire burned quite fiercely, and for a time scores of *Lamprids* flew about in great confusion. Suddenly, as if directed by command, they started off, and crossing a brook that would stay the flames effectually, began to sport about as before. This was in Preston, and several saw the flight of the fireflies.

Once only have I noticed a large flight of *Melolonthas*, though I have often read of such. The one I saw was in Illinois in 1874; there was a host of them and their flight was followed by a severe storm. People thought this the cause of migration, but it is very doubtful to me, yet it is as good a reason as any I can advance.

Some seven or eight years ago, I found over a hundred *Casonia Pennsylvanicus* under a stone in an orchard in Preston, and while this does not bear on the present subject it is an interesting note, because they were the only ones to be found in the orchard, a thorough search proving this. I bottled up seventy-five specimens which lasted me several years for exchanges.

It is well known that a species common one year may be very rare the next, and often a beginner makes a mistake by failing to collect them, thinking he will be able to get all he wants at any time, so losing a good species for exchange.

Why are these insects so common one year and rare the next? The reasons may be many—a mild winter, conditions of the soil, the food of the species, and destruction by insect eating birds have much to do with this; but do not these same causes invite emigration, or is not the massing of a species in a certain locality the result of such migration?

To me this is a reasonable solution of the question. A severe winter may destroy the food of the beetles, or a flood, forest fire or some other natural cause may compel them to seek a more suitable habitation. Probably they are few in number at first but may gradually augment in force until quite a host settle at last upon some likely place, and the young entomologist notes the occurrence of such and such a species but never dreams of the true history of the why and the wherefore.

Evidence of Misfortune.

BY A. W. P.

All familiar with the egg-depositing proclivities of the larger moths, know that they place them with almost mathematical accuracy upon the underside of leaves of their food plants in groups of three and five, and as if the larvæ-sustaining power of the bush were considered by the female many are not laid upon a single shrub. While the female moth may lay from seventy-five to one hundred eggs, it is unusual to find fifteen of the larvæ feeding upon a single bush. For two reasons, probably, this care is exercised, first, to secure to all sufficient food; second, to give them better protection. For while a few only slightly defoliate a shrub, the entire brood would rob it of its leaves before the larvæ were half grown, so that their presence would be made manifest to the poorest observer, and they would be more liable to be destroyed by their enemies.

Only in one instance have I known this precaution to be neglected. A number of years ago at Watch Hill, R. I., I took from a small wild plum bush sixty-two half-grown larvæ of the *Samia cecropia* moth, and this brood told the story of their unusual assemblage quite as clearly to the intelligent observer as though they had heralded it with tongues or sent forth in type, for no good moth mother would have risked so large a family to one little shrub could she have spread her pinions and flown to other shrubs in the neighborhood.

CORRESPONDENCE.

The Study of Ornithology and its Relation to the Decrease of Our Birds.

EDITOR ORNITHOLOGIST AND OÖLOGIST, Sir: That there is a decrease of our birds is admitted by nearly all, though some competent observers claim that there is not, save among a few restricted species of water birds, and even the writer fails to detect the alarming scarcity that some would represent (generally in poetry) as already a deplorable fact, and a glance at my cherry trees this morning would convince the most confirmed alarmist that *some* species were still in existence.

Accepting, however, the general verdict of the "decrease of our birds," the causes that produced this effect next claim our attention. These have been fully set forth and discussed in this magazine in a manner which has won my admiration, and which will, doubtless, be of far more value than the one-sided effusions of some other journals, even for *protection*.

As this magazine is devoted to Ornithology I shall mention that science only as one of the "causes" of the decrease of birds, and further, it is the only allowable "cause"

if I may use such undefined language. The study of ornithology is a legitimate science, as much so as any in the great field of natural history, and if properly carried out will result in no evil to our feathered tribes. Such can be accepted as an established fact, and half a century of ornithological study in this country has proved it, for to-day the scarcity of birds in any locality can be traced to other causes than the student of Bird-life. Neither can the study of this most delightful science be considered as a "cruelty to animals" as a certain society would fain have us believe. "That nothing has been created in vain," and therefore should be spared, is an argument often used against the prosecution of ornithological research. It might be well to inform such as wield that maxim against the science, that it is equally applicable to all *created* life, and if its advice were heeded, all the different branches of the zoological sciences would be unavailable in usefulness, for no distinction is made in the advent into this world between a minute insect or a brilliant bird, both are "created" and "not in vain." Who, then, has the privilege to dictate as to which object of life is to be spared; yet entomology is a science upheld by all, as it should be, but nothing is said against the taking of life, while the ornithologist comes under the edict of cruelty and the destroying of valuable life. Too much distinction is made by those who use the argument quoted above, and in its application it appears a little "too thin," although as a distinguished naturalist and a good man once remarked to me, "Birds are an order of life created for the benefit of a little higher order of life which we call man, by furnishing him an agreeable out door pastime, with a pleasing and beautiful result," and if the actions of our ornithologists, irrespective of station or "scientific ability," can be considered as an index of their belief, then we are most happily a unit.

We were told some time ago about the "nicely adjusted machinery of nature" with such effect that for fully *six minutes* I hardly dared to touch a bird, lest I should be responsible for some break in the complicated mechanism. Did it ever occur in the mind of the reader that Genus Homo, in which all ornithologists are classed, is a part of nature's "machinery," and if the desire is given them to destroy, why is it not one of the workings of the aforesaid "nicely adjusted machinery" as much as the preying of one race of animals upon another. The above argument may seem unfounded and unworthy, but it is only proving of the rule in a new light.

The most serious aspect of the case is to be found among the ornithologists themselves. I am sorry to see this. "A house divided against itself cannot stand," and a harmonious union among the American ornithologists is to be desired. To be sure we have a "Union," but what is in a name? The disposition of the members of the "Union" to ignore the privileges of the young student of ornithology was of no avail, and "pseudo-scientists" still hold their own, and I think the compound name will be contracted to a simple one ere long. Perhaps the most amusing proceedings of certain ornithologists and fish and game "protective" societies, is their efforts for our birds. We have had some startling statistics presented, and exhortations abounding in all the flow of rhetorical composition, but how about the examples? What is the history of the Swainson's Warbler in South Carolina and the prominent ornithologist connected with their slaughter, who himself or by a proxy, secured all that could be found? But never mind, he is one of the committee for the *protection* of American birds. "*Ab uno disce omnes.*"

I give no advice for the protection of our birds, though I most earnestly wish it. Too much has been said. Let the reader do his own thinking from the points barely hinted at in the foregoing.—W. DeForrest Northrup, M. D.

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Some Ornithological Explorations in the Dead River Region of Maine.

BY F. H. CARPENTER.

New England, with its limited area and large number of naturalists, does not offer many new fields for investigations, but it will be conceded that the wilderness of northern Maine contains much yet unknown to science. The reasons are manifest, it being the breeding place of our rarer migrating warblers, and even the species which are common to that section are but little known, being dispersed over a large tract of sparsely settled country, with the attendant difficulties of traveling. It has been my good fortune to annually visit the lakes of Maine, both the Rangely chain and the Moosehead with its river connections to New Brunswick. Of late the trout fishing of the Dead River region lured me to its innumerable lakes and streams, and the varied bird-life there found caused me to give nearly all of my time to observing the ornithological features of the locality. Following the precedence established by authors of similar articles, a brief description of the country immediately concerned will be in place. The northern portion of Franklin and Somerset counties, in which the source of Dead river is situated, and through which it flows in a winding course towards the east for many miles, presents a varied and interesting aspect. Its topography is diversified; the change from the undulating country around Farmington to the heights of Mt. Bigelow, "the third highest mountain in Maine," gives a succession of altitudes pleasing to all lovers of mountain scenery, while the fair cultivated fields of Kingfield and New Portland, when compared with the unbroken wilderness stretching away through unnamed townships to the Canada line, presents a contrast seldom to be found within the confines of one country. The country is well watered abounding in small lakes, rivers and mountain streams. In the northern part it is covered with the original growth of evergreen trees interspersed

with a few tracts of hard wood groves. Around some of the lakes are extensive swamps of alder and hackmatack, which proved to be the breeding resort of many species of the *Mniotiltide*. In the middle and southern sections a second growth of birch has appeared to take the place of the victims of the lumberman's axe. To explore this region thoroughly is no "kid glove affair," it means many a weary mile of walking on the rough trails leading over steep mountains, or through the tangled debris of some ravine blocked by trunks of trees hurled down the cliffs by some mountain tempest. Canoeing on the rivers was often at risk of life, and needed a firm hand and quick eye to run the rapids and avoid the rocks of the rushing streams. In traversing the country I confined myself to no one place; with my guide for a companion we were "on the march," halting when night overtook us or a camping site was found. For kind assistance rendered I am indebted to many of the settlers of the country adjacent to the wilderness, also to many of the sportsmen at Kennedy Smith's camps at Tim and Seven Ponds, and especially to my faithful guide, Joe Sampson, whose knowledge of woodcraft secured for me many specimens new to my experience. The criticising scientist will demand to be informed of the time spent in the locality and upon what grounds I presume to place before the reader the account of my sojourn in search of the birds of the region. Concisely stated the periods are as follows: May 28 to June 14, 1883, Dec. 30, 1883, to Jan. 14, 1884, Aug. 18 to Sept. 13, 1884, and Aug. 19 to Sept. 17, 1885. The most novel experience being the fortnight spent at the lumber camps in the winter of 1883-4. Frequent mention of the features of the region will occur in the following text, as I shall not confine myself to the dry bones of a technical list. The fauna of Franklin and Somerset counties is principally Canadian, though some species considered typical of the Alleghanian, are to be found in the southern portion, which may be considered as about the dividing line between the two faunæ.

Not yet being a convert to the new order of no-

menclature, I give the species in the order of the *Nomenclature of North American Birds*, by Robert Ridgway, and desire to inform the reader that the purpose of this paper is to present the personal experiences with the birds in the field and forest rather than a mere scientific list; recognizing but one law, as an *ultimatum*—a truthful record of bird-life as observed in this wild mountain region.

1. *Hylocichla aliciae*, (Grey-checked Thrush). Two specimens of this species were secured in June, 1883. They may have been common, but could not be distinguished from the Olive-backed Thrush unless taken in hand. Some ornithologists decline to recognize this species as distinct from *H. ustulata swainsoni*, the writer considering it a debatable question. Both specimens alluded to above were taken along the alder fringed banks of the Carribossett river, and were evidently migrating in company with others of same species or the Olive-backed variety.

2. *Hylocichla ustulata swainsoni*, (Olive-backed Thrush). Fairly common. More often observed in the hard wood forests around the cultivated fields of the southern portion of Franklin county, than in the dense spruce tracts further north, while in Somerset county they were more common in the northern portion. A nest containing three eggs was brought to me while at Flagstaff, "Taken from among the roots of an overturned spruce about as high as my head," was the ill-constructed phrase of the youth who secured them for me.

3. *Hylocichla ustulata pallasi*, (Hermit Thrush). One of the typical birds of the dense forests of Maine, the Hermit Thrush was commonly found in this region. In the spring this species is more conspicuous, as at that period of the year it bursts forth into song, but during the latter part of summer when passing through the woods I have seen many of these birds sitting on the limb of some spruce tree, motionless and alone, scarcely flying out of reach when approached. Owing to such demeanor they were easily overlooked, even by the few who penetrate the vast silent forest they inhabit. A nest was found containing young, in the alder swamp near Tim Pond. It was placed on a dry mound, in a heap of rubbish left by the spring flood. The nest was a frail affair, but could not be examined, owing to its contents. The song of the Hermit Thrush is exquisite, and during the first part of June it was heard at morning and evening. The song of birds is about the only part of their life habits which can not be given on paper, and I have noticed that scarcely do two persons interpret a song the same, both will have a different rendering of the same song, this may be in part due to the state of the feelings

of the hearer; in my own case it has been very apparent with the song of the species under consideration. When after a hard day's tramp, I have lain wrapped in my blanket under the friendly protection of a wide branching hemlock, listening to my guide as he related some tradition handed down from the days when his ancestors' wigwams stood on the banks of the fair Penobscot until drowsy nature nearly asserted herself, then the vesper song of the Hermit Thrush distinctly uttered far up on the mountain side, would fill the air with its sweet strains, and at its cadence both of us, stoical half-breed and tired civilian, would under the influence repose into a dreamless slumber; yet on the morrow morn, when standing in the bow of the frail birch-bark canoe, held tremblingly among the rushing rapids of Spencer stream by the brawny arm of my companion, with nerves strung to high tension, as I endeavored to bring to net a vigorous two pound trout with an eight ounce split-bamboo for my rod, and when successful and the toothsome fish lay in the canoe, then the matin hymn of the Hermit Thrush as it sounded clear on the morning breeze seemed to my ear like the triumphant pœan of victory, but perhaps the critic, unmoved by surrounding circumstances, could have perceived no variation from the notes uttered at eventide.

4. *Merula migratoria*, (American Robin). At present a common summer resident in all settled portions of the counties. Breeds commonly. I was informed on good authority that their occurrence in the northern portion is recent, they appearing within a few years in much larger numbers than natural increase could account for, therefore the conclusion remains that they must have "emigrated northward" from some former breeding locality. Since the writer's experience the Robins have penetrated some twenty miles in the wilderness and nested at both of Kennedy Smith's camps at Tim and Seven Ponds, increasing in numbers each season.

5. *Catopsops carolinensis*, (Catbird). I was shown the skin of this species by a gentleman in Farmington, who secured it in that town. I did not see it at all north of that latitude.

6. *Sialia sialis*, (Bluebird). In the southern portion of both counties a few birds of this species were seen around the houses, and occupying boxes erected for their use.

7. *Regulus calendula*, (Ruby-crowned Kinglet). This species was not common. During the winter I did not observe it at all. Saw it only in the evergreen woods about Eustis.

8. *Regulus satrapa*, (Golden-crowned Kinglet). Saw this dainty little creature at all seasons of

the year. Without doubt it commonly breeds, as I observed females carrying material for nests, also the males with food in their bills, yet they eluded my careful search. These birds are very tame and fearless, often entering our cabin at Tim Pond between the logs and flying about the interior, evincing no fear of the occupants. A nest containing an incomplete set of five eggs taken at Caribou, Me., may be described as follows: The nest resembled to a certain extent that of the Blue Yellow-backed Warbler, but differed in having small pieces of hemlock twigs and grouse feathers woven on the outside. The inside was lined entirely with feathers of the Grouse and Canada Jay. It was placed partly pendant from a horizontal branch of a small hemlock at the edge of a forest. The eggs measure as follows: .51x.42, .50x.41, .51x.40, .51x.40, .49x.40. They resemble in color those of the Least Flycatcher, but have a few buff and drab markings in form of spots at larger end. This nest was found by my companion. Dr. W. De F. Northrup, who generously presented it to me. The birds, both male and female, were secured, thus establishing identity beyond doubt.

9. *Parus atricapillus*, (Black-capped Chickadee). I commonly observed this species in all portions of the region except the extreme northern part. A few nests were found, nidification the same as in other States. None were noticed in winter save a small flock of six seen in Farmington.

10. *Parus hudsonicus*, (Hudsonian Chickadee). A small flock seen in January, 1884, from which I secured three. They came about the lumber camps, to the shelter of the hay shed, during a snow storm.

11. *Sitta carolinensis*, (White-bellied Nuthatch). This species was seen in both spring and summer. They were as often observed in the deep woods as in the clearings, although the latter offered more suitable nesting sites. They were not observed in the southern or middle portions of either county, seeming to occur only in the wilder localities about Dead river. Only two nests were found, one of which was unfinished in lining. Both nests were old holes of the Downy Woodpecker in dead birch stubs in old clearings, in which was placed a mass of material consisting of feathers, moss and hair.

12. *Sitta canadensis*, (Red-bellied Nuthatch). This restless little bird was not often observed. A few were seen at each season, those being about the clearings at Kingfield and Stratton. No nests were found, yet they undoubtedly breed.

13. *Certhia familiaris rufa*, (Brown Creeper). This species was observed to be equally common

in all portions of both counties in spring and summer. A nest found June 5th was placed under a loosened cedar "splint" on the roof of an old and deserted log cabin; it contained five eggs nearly fresh. As they are well known, no description is necessary.

14. *Anorthura troglodytes hyemalis*, (Winter Wren). The only individual of this species observed in the county was a female which I flushed from her nest placed between the interstices of the logs in the dam on Tim brook June 3d. The nest was placed in the rank growth of moss which was affixed to the logs and contained five eggs quite fresh. Although these birds were spoken of by the lumbermen as common, I could not catch a glimpse of another during my stay, their quick movements in the thick coverts effectually screening them from view.

15. *Anthus ludovicianus*, (American Titlark). A small flock seen on the open marsh near Flagstaff pond September, 1885, is the only instance I can record of their occurrence.

(To be Continued.)

Notes on Some Birds of the Great Smoky Mountains.

BY ARTHUR LEMOYNE, M. D.

For some time past I had in contemplation an extended visit to the mountain districts of eastern Tennessee and western North Carolina, hoping to add thereby to my knowledge of the birds of that region. Having been preceded by another ornithologist in the latter state, and lest it might seem like imitation and lacking originality, I confined myself to the northwestern slope of the mountain ridge and the adjacent counties in Tennessee.

I arrived at Newport, a station on the East Tennessee Railroad, on February 20, 1886, and after spending a month with a relative in an adjacent town, I began to travel through the neighboring counties to note the arriving migrants. After spending the time until June 1st, in this country, I returned to Massachusetts by way of the Virginia & Tennessee Railroad, and leaving the railroad at Abingdon, I spent a fortnight near Lebanon, Va., near the Clinch river, with good results in additional species noted. While in Tennessee I visited Greene, Cocke, Sevier, Blount, Roane and Monroe counties, they all lying in the eastern limits of the state and meeting the North Carolina state line in the mountain range. The Great Smoky Mountains are a continuation of the Alleghany chain, and former geographers of the region used to so classify them in the published

editions of their works. The altitude of the region presents the usual variable characteristics of uneven and mountainous country, and the few observations noted on that subject will be given in connection with the following notes as a phenomena with bearings upon the bird life.

A large growth of hard wood trees cover the mountains except on the summits of the higher ranges; here the evergreen asserts its right, the "black woods" of the natives. The valleys, owing to the abundance of streams, are well covered with a luxuriant growth and great variety of trees, chiefly deciduous.

It is with considerable diffidence I present my observations, for in many cases they will conflict with those published by my predecessor in western North Carolina, and therefore will be subject to peculiar criticism. The country is well known to me, the summit of Bald Mountain could be seen from my early home "before the war."

Contrary to the usual *modus operandi* of publishing observations of a number of species, I do not present my notes as a list or in "catalogue order," but giving the history of a species with nearly complete field notes as possible, regardless of its occurrence in any nomenclature as regards numbers, and in so doing I find I establish no precedence. The nomenclature of classification is that of the A. O. U. publication.

DENDROICA BLACKBURNIÆ.

Blackburnian Warbler.

This beautiful little Warbler arrived in Monroe county on April 22d, that being the date of first observation; on the following day they were seen quite commonly. These birds were noticed only along the edges of the open fields, some distance back from the mountains, and in company with Chestnut-sided and Yellow Warblers. Up to May 3d, I saw them only in such places, when on that date I observed a single one in the mixed growth of oak and chestnut on the mountain sides. During the first week in May they were very common, but about May 10th they diminished in numbers, and by the 15th not one could be found in an entire day's tramp. On the 18th a severe rain storm accompanied by a cold northeast wind occurred, and on the following morning a few were seen gleaning insects in the developing foliage of the water oaks (*Quercus aquatica*) and a number were seen in the oak forests on the mountains, but by night they had disappeared and none were seen the next day. An ascent of Smoky Mountain, in Blount county, on May 25th, discovered to me this handsome Warbler in full numbers. They were principally met with at about 3,000 feet altitude on the dividing line between the spruce (*Abies nigra*) and the deciduous

trees, and which gave an equality of the two varieties. Proceeding still further up, I found a few birds of this species, but the majority seemed to prefer an admixture of the hard wood growth. At Roane county, in the Walden ridge, this Warbler was found to select the spruce growth at a higher altitude than on Great Smoky Mountain; perhaps the southern slope of Walden necessitated a higher rise to equal the same temperature of the northern exposure of the Great Smoky chain. The movements of the Blackburnian Warbler define quite plainly the faunal lines of this country. The three faunæ so well known to New England or Eastern North America, the Canadian, Alleghanian and Carolinian, give to this region all of their distinctive features; the extreme mountain heights representing the Canadian, the Alleghanian from about 4,000 feet altitude down to the Carolinian, which meets it at about 2,000 feet. Mr. Brewster gives altitudes at about 500 feet higher in each instance, in his observations in North Carolina, but the localities must vary as the figures given above are correct for this region, as great care was taken in determining the faunal lines.

Several readings of the thermometer were taken at various heights. On May 21st, in the valley, the mean temperature was 48°. May 22d, at about 2,500 feet, the mean was recorded at 42°, and at 4,000 feet the mean was 38°. Less variation was noted at the latter height, the mercury not rising higher than 44°, while in the valley 60° and 36° were the extremes on May 21st. The especial value of the above thermosatic notes in determining the relative temperature comes from the fact that in the valley the thermometer was the same on all three days, viz., 60° as a mean record. I found the Blackburnian Warbler a true type of the Canadian fauna, hence the above notes in connection with it. The Blackburnian Warbler despite the fact of keeping in nearly similar surroundings, breeds earlier than those of same species which penetrate farther north. A nest was found by my cousin, who accompanied me, on May 31st. It was placed on the horizontal limb of a fir (*Abies fraseri*) and not so compact as one found by Mr. F. H. Carpenter at Mount Bigelow, Maine. It was almost as flimsy as that of the Chestnut-sided Warbler, and contained only one egg. The female sat upon the edge of the nest and would not leave it until the outstretched hand was within a few inches. Upon leaving it undisturbed she immediately resumed her former position and in a few moments the male brought a larger specimen of *Ephemeridæ*, which they both were obliged to industriously dissect in order to swallow.

DENDROICA CÆRULESCENS.

Black-throated Blue Warbler.

This species arrived a little in advance of *D. blackburniæ*, being first observed in Monroe county April 18th, but in very limited numbers, with no perceptible increase until May 3d, when they were seen in considerable numbers in the large tracts of rhododendron and along the cultivated fields and pastures. Their numbers considerably lessened, and by May 12th only a few remained. A close search could not discover them, but a few were found on the mountains at an altitude of about 3,500 feet at the edge of the evergreen growth. In Roane county, on May 16th, they were fairly common on Walden's ridge, at an altitude of about 4,300 feet. On May 21st, the day before ascending Great Smoky Mountain, I saw a pair in a small grove of red maples (*Acer rubrum*), and again on May 24th, the same pair (presumably) were seen carrying material for a nest into a dense laurel thicket. They could not be restricted to any faunal limit, the preference, if any, being for the intermediate station. I was especially fortunate in observing the nidification of this species, in a small laurel swamp, which with the assistance of three obliging lumbermen, I thoroughly searched on May 29th. Three nests were found, but many were overlooked as the swamp was alive with these warblers. The first was placed in a laurel bush about a foot from the ground. It was similar in appearance to that of the Maryland Yellow-throat, but considerable cotton entered into its composition. It was empty, the birds evidently had just completed it. The second nest was in a similar position to the first, being a little higher from the ground. Its structure was more ornamental, a great deal of a flaxy material being woven into the outside. This nest contained four fresh eggs, pinkish-white marked with a few reddish-brown spots; one egg differs from the others in not possessing any markings whatever save a few light-brown ones on the larger end. Dimensions as follows: .63x.49, .63x.50, .61x.48, .62x.49.

The third nest was also in like situation, but built more compactly and neatly than either of the preceding. It contained only two eggs, which were not taken.

(To be continued.)

Baird's Sparrow in Iowa.

(*Ammodramus bairdii*.)

BY LYNDY JONES, GRINNELL, IOWA.

I first found this very interesting little bird on April 25, 1885, when I shot one and saw four or

five more. It was very shy and kept so close to the ground that a momentary glimpse was all that I could get of it. This was doubtlessly the latest date of its visit with us, as but few if any were seen later. It entirely escaped my notice in the fall, but on March 24, 1886, three or four were seen in company with the Savanna Sparrow. I noticed that it often perched rather higher than I had ever seen the Savanna Sparrow, but I never heard its song, although I watched and waited many long hours for that purpose. Its diet seems to be the same as that of the Savanna, as is its manner of feeding. Although the van appeared so early, it was not seen again until March 29th, and no perceptible increase in numbers until April 8th, when as many as fifty were found in a mile drive. After April 10th few were seen until the 21st, when none could be found, and not one since, so I consider April 20th the date of "last individual seen." Whether or not it returns south of this route will be determined this fall.

Notes on Some Birds of the United States which Occur in the Mexican Fauna.

BY JUAN RENARDO.

[Translated from the Author's MSS., by F. H. Carpenter.]

[It might be proper to explain the circumstances of this list and those to follow. The author has been collecting a series of Mexican birds (of U. S. fauna,) for the writer, and at our request notes of each species collected were to be given, of its status, as observed by the collector, in the Mexican fauna. The birds were received a short time ago, each species accompanied by notes regarding its distribution, etc. These notes have been arranged in order and translated, we inserting the specific as well as the English names. All the specimens on which notes are given were taken and sent to us, therefore fully authenticating the statements of occurrence. Additional species may be obtained and will be noticed in these columns. The chief value of these notes consist in the pointing out of some of the places in the "indefinite south" to which our summer birds go.—F. H. C.]

Harporhynchus longirostris, (Long-billed Thrasher). Common near Tampico. Saw one specimen as far south on the Gulf as Campeche. Breeds mainly in northern part. Nest found at Linares contained three eggs, which is the usual number. Nest a flimsy affair of fine bark and leaves placed on the ground at foot of a mesquite.

Harporhynchus curvirostris, (Curve-billed Thrasher). A common species; observed on both coasts.

Seen at all seasons of the year at Queretaro. Nest placed in a thick dense growth of bushes; the prickly pear and other of like nature preferred. The nest is compact and strongly made, lined with the grass stems of various grains. Eggs differ from foregoing, in having ground color of a greenish hue, and the spots more distinct and each with a certain individuality.

Poliopitila cœrulea, (Blue-gray Gnatcatcher). Occasionally seen during the winter months around Tampico and Pachuca.

Parus atrocristatus, (Black-crested Titmouse). Fairly common in the northern part of the Republic; especially along the valley of the Rio Grande and around Lampazos, where it breeds. The material used in the nest reminds me of that of the Great-crested Flycatcher.

Auriparus flaviceps, (Yellow-headed Tit. Verdin). Tolerably common along the Rio Grande, and seen further south in winter. Breeds commonly, building a large nest with an imposing exterior of thorns placed in an almost impenetrable bush.

Sitta carolinensis aculeata, (Slender-billed Nuthatch). Noticed several times in the timber on the river banks.

Campylorhynchus brunneicapillus, (Cactus Wren). A common resident of the northern portion of Mexico. Conspicuous in its nesting among the cacti, it is one of our prominent breeders. Eggs are found at various dates throughout the summer and proves that more than one brood are raised.

Salpinctus obsoletus, (Rock Wren). Have seen this species in the vicinity of Guaymos and in the adjacent interior country. No observation of its breeding recorded, though it probably does. Have often seen small bands of a dozen or more scurrying along the rocky banks of some cañon stream.

Cistothorus palustris, (Long-billed Marsh Wren). One specimen taken from a small flock at Tampico is the only record I have of its occurrence at that locality.

Anthus pensilvanicus, (American Titlark). Quite common in winter along the coast and in some interior marshes.

Mniotilta varia, (Black and White Warbler). Most commonly observed as a migrant at Tampico. Several were seen inland from Campeche in winter.

Protonotaria citrea, (Prothonotary Warbler). Several were noticed when at Campeche during the winter.

Helmitherus vermivorus, (Worm-eating Warbler). Several of this species were noticed during the latter part of winter at Pachuca.

Helminthophila chrysoptera, (Golden-winged Warbler). A few were seen in the winter season of 1885 and 1886, at Campeche and Merida. Observed that they kept mostly in small flocks; generally in pairs.

Helminthophila ruficapilla, (Nashville Warbler). Common in winter at Campeche, and even a few were seen as far north as Pachuca. They move in flocks.

Compsothlypis americana, (Blue Yellow-backed Warbler). An abundant bird at certain times. Have seen a few at Tampico quite late in winter, but the larger numbers are to be found at Merida and south of the city.

Dendroica aestiva, (Yellow Warbler). Noticed commonly in the country between Campeche and Guatemala. A very restless bird.

Dendroica blackburniae, (Blackburnian Warbler). Not commonly observed. Seen a few times flitting through the groves near Tampico. Also observed in winter at Merida.

Geothlypis trichas, (Maryland Yellow-throat). Common in winter about Campeche and farther south. Do not notice it at Tampico in spring, although it is frequently observed in autumn.

Icteria virens longicauda, (Long-tailed Chat). This is another species which is observed more plentifully about Guamas and along the Pacific coast.

Sylvania mitrata, (Hooded Warbler). This species comes under my notice in a rather erratic manner, some seasons not observing any, while some winters they are common. Usually to be found around Campeche and thence to Guatemala.

Sylvania pusilla, (Wilson's Warbler). Fairly common at Tampico, when moving south in autumn and early winter. A few remain about Merida all winter.

(To be continued.)

The Relative Size of Eggs of the Red-tailed Hawk to the Parent Bird.

In no work on Oölogy with which the present writer is acquainted has the very interesting question of the relative size of the parent birds to their respective sets of eggs been considered. In the present article it is proposed to give the measurements of a series of eggs of the Red-tailed Hawk, (*Buteo borealis*), together with the size of the female parent of each set. In each case the female was shot as she flew away from the nest, and the skin preserved with the eggs. The parent birds and the eggs are in the cabinet of F. H. Carpenter, who has very kindly furnished all the measurements, notes, etc. All the measurements are in inches, and any credit which is

due for the idea of this article should be given to Mr. Carpenter; who not only conceived it but furnished the writer with the material to carry out the theory.

I. Bristol County, Mass., April 7, 1884. Two eggs. No. 1: 2.43x1.81. No. 2: 2.35x1.80. Dull colored specimens. No. 1, marked with a few blotches of brown evenly dispersed over the egg. No. 2 has the brown spots centred about the larger end. Female bird measures: Length, 22 5-16; expanse, 51 9-16. Very poor in flesh.

II. Berkshire County, Mass., April 11, 1883. Two eggs. No. 1: 2.28x1.75. No. 2: 2.30x1.77. No. 1 is marked with a single large dull brown blotch on large end, and the ground color is dirty white. No. 2 has the ground color dull white, streaked with drab, and is a very plain egg. Female bird measures: Length, 21 10-16; expanse, 49 2-16. In fair condition.

III. Berkshire County, Mass., April 11, 1883. Two eggs. No. 1: 2.33x1.87. No. 2: 2.37x1.90. No. 1 is bluish white, with a few small brownish spots. No. 2 is bluish white, unmarked. Female bird measures: Length, 23 4-16; expanse, 51 13-16. In very poor condition.

IV. Eastern Connecticut, April 8, 1882. Two eggs. No. 1: 2.28x1.90. No. 2: 2.34x1.86. No. 1 is marked with large splashes of bright brown, stained, and No. 2 is marked with a few purplish spots on a dull white ground color. Female bird measures: Length, 23 12-16; expanse, 52 8-16. In fair condition.

V. Eastern Connecticut, April 11, 1882. Two eggs. No. 1: 2.41x1.96. No. 2: 2.38x1.92. No. 1 is bluish white, unmarked, but very much stained, while No. 2 is entirely different, having heavy large blotches of brown on a dull white ground. Female bird measures: Length, 24 5-6; expanse, 53 14-16. In very fair condition.

VI. Central New York, April 13, 1881. Two eggs. No. 1: 2.46x2.01. No. 2: 2.43x1.93. Both are very similar in appearance, and beautifully marked with reddish brown blotches on a bluish white ground color. Both the parent birds lived luxuriously on the offal of a slaughter house, which was not far from the nest. Female bird measures: Length, 24 14-16; expanse, 55 3-16. Very fat.

VII. Central New York, April 14, 1881. Two eggs. No. 1: 2.39x1.87. No. 2: 2.36x1.91. No. 1 is marked with dark brown blotches, and No. 2 is bluish white, stained, and has a few brown spots about the larger end. Female bird measures: Length, 22 12-16; expanse, 50 5-16. In poor condition.

VIII. Western Connecticut, April 12, 1882. Two eggs. No. 1: 2.23x1.82. No. 2: 2.28x1.78.

No. 1 is dull white, marked with a few purplish and brown blotches, while No. 2 is marked with bright brown spots about the larger end. Female bird measures: Length, 20 11-16; expanse, 47 8-16. Very fat.

IX. Western Connecticut, April 13, 1882. Two eggs. No. 1: 2.39x1.83. No. 2: 2.41x1.87. No. 1 is bluish white, with a few brownish spots about the smaller end. No. 2 is of the same ground color, but is unmarked. Female bird measures: Length, 22 4-16; expanse, 53 11-16. Fat.

X. Berkshire County, Mass., April 8, 1883. Two eggs. No. 1: 2.29x1.86. No. 2: 2.34x1.84. No. 1 is dull white marked with a few purplish spots about the larger end, while No. 2 is dull white, with a few nearly obsolete spots about the larger end. Female bird measures: Length, 24; expanse, 52 3-16. In very poor condition.

XI. Bristol County, Mass., April 12, 1885. Two eggs. No. 1: 2.33x1.88. No. 2: 2.40x1.79. No. 1 is dull white, marked with a number of small reddish brown spots. No. 2 is also dull white, but has a number of brown spots about the larger end. Female bird measures: Length, 24 13-16; expanse, 54 7-16. Very fat.

It will be seen, from an examination of the above measurements, that the size of the eggs seems to depend on the size of the female parent, for while No. VIII (the smallest bird) measured only 20 11-16x47 8-16, the eggs measured 2.23x1.82 and 2.28x1.78; and in the case of No. VI (the largest) the female measured 24 14-16x55 3-16, and the eggs 2.46x2.01 and 2.43x1.93. All the other eggs bear relative proportions of size to their female parents, and this interesting fact may be considered as established beyond dispute by the foregoing measurements. The larger the bird therefore the larger will be the egg for that species, and *vice versa*. Of course in the event of the birds being deprived of their eggs, the second or third set laid would probably be smaller, and the rule would not hold good. The dates at which these eleven sets of eggs were taken, and the parents shot, forbid the supposition that any of them could have been second sets.

New Checking List.

Frank H. Lattin, of Albion, New York, has just published a new checking list which will prove a great convenience to collectors of birds and eggs. It is neatly printed on good (sized) paper, which will not run when written on with ink, and in addition to the English names of the birds it gives both the numbers of Ridgway's nomenclature and that of the A. O. U. list. Its clear type and handy size cannot fail to make it popular.—*J. P. N.*

THE ORNITHOLOGIST —AND— OÖLOGIST.

A MONTHLY MAGAZINE OF
NATURAL HISTORY,

ESPECIALLY DEVOTED TO THE STUDY OF

BIRDS,

THEIR NESTS AND EGGS.

DESIGNED AS A MEANS FOR THE INTERCHANGE OF NOTES
AND OBSERVATIONS ON BIRD AND INSECT LIFE.

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Editorial.

Here in Massachusetts it looks as though the Fish and Game "protective" Association Parrot had been fooling with the Taxidermist Monkey, after the manner of a parrot and monkey, owned by a certain gentleman, which had got together in their owner's absence, the result being that the monkey's dexterity in the melee reduced Polly to a mere remnant. Sufficient life, however, remained in the featherless talker to exclaim, "We've had a — of a time."

We present in this issue, as we previously announced, the first paper of the series treating of the birds of Eastern Tennessee. Dr. LeMoyné will write, at present, of only those birds whose life habits are well known to him in that region and he will return to that locality in the autumn, where by close observation of the migration and a protracted stay into the winter months, before going further south, he will be able to note many additions and verify records. He will then present through these columns a complete and systematic list of the birds of the region; a course not thought advisable at present.

We announce with pleasure that the demands of the ornithological science have been recognized by Congress. It has been separated from the Division of Entomology into a separate one, to also include a study of the "food habits, distribution and migration of mammals." This new division will have the same efficient officer, Dr. Merriam, at its head, and though the influence of Senator Miller, of New York, the sum of \$10,000 has been appropriated for the "Promotion of Economic Ornithology and Mammalogy; an investigation of the food-habits, distribution and migration of birds and mammals in relation to agriculture, horticulture and forestry; for publishing reports thereon and for drawings and traveling and other expenses in the practical works of the division."

In our correspondence department a writer in a short but pithy article "protests" in our behalf. On the first reading of the Ms. we felt inclined to return it to our correspondent, as we confess our sense of pride was touched, we having always made it a point to fight our own battles, especially in connection with this magazine, and just as success was about to be achieved, we thought our correspondent was a little premature. On after deliberation we concluded to insert it unchanged in text from author's Ms. Should we divulge the writer's name, it would create a surprise in certain circles.

Obituary.

CHARLES OLIVER TRACY.

It is our sad duty to record the death of Charles O. Tracy, who died at his home in Taftsville, Vt., April 22, 1886. Many of our readers will remember his contributions to these pages, in which he gave evidence of his love for his favorite science. A useful life has been cut down in its prime, and we tender to the afflicted family the sincere sympathy of his co-workers in the natural sciences, who cannot but feel their loss.

The following is from the *Vermont Standard*, of May 6: "Died at his home in Taftsville, Vt., April 22, 1886, of consumption, Charles O. Tracy, aged nearly thirty years. He had been failing in health for some time—indeed he never recovered from the assiduous watching and careful nursing of his beloved wife. He endured his sickness with fortitude and very remarkable patience, never complaining, heroically struggling with disease when there was no hope of recovery. Mr. Tracy was a gentleman of culture, of genial and happy disposition, and of exemplary moral character. He was well known and highly respected in the community where he resided, always intimate in good society. He was a true friend of temperance—true to principle, never forsaking the cause when others faltered, or grew weary in battling its enemies; many years a member of Good Templars in Taftsville, and filled from time to time its offices of trust and responsibility, and always with kindness and courtesy, where his loss will be deeply felt. The loss of him will also be felt by his neighbors and friends, but most especially by his family. To them he was inestimable; to us he was a dear friend and valued associate. He expressed much confidence in the mercy and loving kindness of God all through his sickness, conversing always cheerfully of his approaching death, and at all times entreated his friends not to mourn for him."

Foreign vs. American Taxidermists.

Montague Browne, F. L. S. &c., in his revised edition of *Practical Taxidermy* pays the following *graceful* compliment to American Taxidermists: Ranking the taxidermists of the world, after reviewing the Germans, he says, "Next come the French, then the English, and lastly, the Americans. The Americans are the worst simply because they adopt the crudest English methods of taxidermy, with other bad habits of ours. I may say that I never

saw an artistic piece of work, not a well made skin, coming from America, unless done by a German or a Frenchman. I believe, however, the European element is working wonders among them, and reading Mr. Batty's book, (if he be a true American), I was very favorably impressed with the signs of progress contained therein, and I should not at all wonder if soon our American friends 'go ahead' and quickly leave us behind. Prof. Henry A. Ward, in a well written article in one of his 'Bulletins' sent to me, has, since I wrote the above, confessed the great superiority of European over American taxidermists, but says that within the last few (very few) years, their native taxidermists have greatly improved, owing to the importation of clever foreign artists, who are gradually educating the American workmen. Just before this there was an entertaining article in the *Century Magazine*, and illustrations were given showing the best work of the American taxidermic artists. I must say, however, that unless the draughtsman failed to copy what an educated eye looks for, none of this work struck me as being of a high order—one or two 'pieces' being decidedly capable of improvement."

If Mr. Browne had been the possessor of several lots of skins that it has been our misfortune to have been at the expense of importing from his country, he would substitute English for American. It is a peculiar fact that we have arrived at the same conclusion in regard to the incapability of the English taxidermist to make what we consider good skins. We, however, would not publish it as a fact, lest we display the same lack of knowledge that he has. Taxidermy is young, comparatively with us, but for several years there have been first-class skins prepared by Americans, in the market, and we can furnish workmen who can compete with foreign artists. So far as artistic taxidermy is concerned, we have seen the article in the *Century* referred to, and if that maga-

zine displayed poor taste in its illustrations it has done no more than Mr. Brown has in his cut of a Peregrine Falcon in flight, which appears to us more like the bird struggling to scratch its ear. From statements that we hear by parties who have seen many of the English collections, we have formed the idea—that they are remarkable for vastness rather than beauty—and that our American collectors will compare very favorably with them in workmanship. If we are to accept Prof. Ward's "confessions" we are entitled to no credit, and it is only left for us to patiently struggle and improve under our *import-ed, clever foreign tutors.*

Chickadees and Oak-borer.

BY WALTER HOXIE, FROGMORE, S. C.

About the middle of June, I noted a pretty little episode illustrating the close inter-relation of ornithology and entomology. I was returning from a long and unsuccessful search for the eggs of the White-eyed Towhee. It was near noon as I was passing through an open oak wood. It had rained heavily all night and most of the morning, and now the air was steaming hot and still. Every sound came clear and distinct from far and near, and among the many familiar notes that greeted my ear I was specially attracted by the eager voices of a family of Carolina Tits, whose voices seemed to indicate that something unusual was going on. My curiosity being aroused, I made my way toward them, and when at last I came up to the tree they were on I could not at first discover what it was that excited them so. There were nine of them gathered close to the trunk of the tree and all talking at once as hard as they could. While I watched them a large gray moth with yellow hind wings fluttered from among them to another tree, to which they promptly and noisily followed. Several times this manoeuvre was repeated, and I was at a loss to account for their interest in an insect which was apparently too large to become their prey. The moth was evidently very tired and at last found a resting place in the crotch of a big red oak. I was so fortunate this time as to gain a close position for observation, and speedily ascertained that it was a female engaged in depositing its eggs, and that the little birds were feeding on them as fast as laid. I identified the specimen as

Xylentes robinæ on my return home. I notice also that it was quite a late hour in the day for this species to be laying. Possibly the rain had interrupted the operation.

PRACTICAL TAXIDERMY.

CHAPTER XIII.—MOUNTING DEER HEADS.

[In publishing these articles on Taxidermy all rights are reserved for future publication in book form.]

In mounting deer heads, it is my practice, if I have the skinning of the specimen, to commence at the neck and skin to the base of horns or skull, without slitting the skin, disjoint the neck and then skin from the mouth back, thus leaving the skin attached to the horns as nature formed it. Removing the brain, I use a carpenter's gouge for cutting out the nares, and in place of nostrils fit a wooden plug shaped to proper form. If the lower jaw is very heavy or deep, as is sometimes the case, and the mouth short, it will be necessary to remove the lower jaw in order to complete the skinning process. When ready to set up, the mouth is sewed from the outside; the stuffing of the nose, jaws, etc., is through the nostrils with a heavy wire slightly flattened and grooved for the purpose. I like the method of skinning because it makes perfect work about the base of horns.—*W. L. Walsh.*

Ratio of Major and Minor Axis of Eggs.

BY WALTER HOXIE, FROGMORE, S. C.

My observations lead me to consider the ratio of the major and minor axis of eggs to be dependent on the length of time the egg is retained in the oviduct. Eggs laid daily are normal in shape, while those laid every other day are longer. When two days intervene the egg is abnormally long and pointed. Twenty-eight nests of the Boat-tailed Grackle have been closely watched before reaching this conclusion. A number of dissections of the same species of bird tend to substantiate the same theory. Here may be an explanation of the manner in which old and experienced "hen wives" can determine the sex of an egg. If it is conceded that the male is higher in development than the female or that he takes a proper time to develop, then these long eggs are those which will hatch out as males. This is of course a mere hint at a theory and I hope I may hear some fresh facts, either pro or con from correspondents or through the columns of the O. and O.

Nesting of the Bay-breasted Warbler.

BY WILLIAM L. KELLS, ONTARIO, CANADA.

Some nine years ago I determined to put into execution a design that I had long conceived—that of making a collection of the eggs of all the birds found to nest in this vicinity, for with other collectors I had then no acquaintance, and but an imperfect knowledge of how to prepare my specimens. So after making a collection of all the specimens found nesting around home, and prepared them as best I could—some by a hole in each end, and some by a hole in the small end—I set off one day in the early part of June for the wild, swampy woods to the northwest of the town. After penetrating some distance into the first piece of wood that I entered, the first nest that I discovered was placed about eight feet from the ground, between some leafy twigs and the trunk of a small birch tree. This was composed outwardly of fibrous bark, especially birch rootlets, and was neatly lined with pine hair, and the interior was a little over two inches in diameter by one in depth. It contained three fresh eggs, of a clear white, with a bluish tinge, thickly spotted with brownish spots, especially towards the large end. These, in size, were a little larger than are those of the more common Chestnut-sided Warbler (*Dendroica Pennsylvanica*). I did not see the bird to which this nest belonged, nor would I then have been able to identify it if I had. The next season, however, I saw a little bird forming its nest on the horizontal branch of a small water elm that stood on the edge of a drain, in a piece of low woods south of the town. Of the size and markings of this species I took particular notice, for she exhibited little fear, and the nest site was only about twelve feet from the ground, and the nest when finished, and the eggs therein deposited, were exactly like those above described. This bird I afterwards identified as the Bay-breasted Warbler (*Dendroica castanea*). Some days after I first discovered this nest I visited it and found that it contained one egg, and in three days more I plucked the bird off and found that the nest contained but three eggs, which I concluded was the full set, and so took them. Later on in the season, in another swampy wood, I found (in the top of a small hemlock, about fourteen feet off the ground), another nest of the same species, containing four fresh eggs. Since then I have seen no nests of this bird, save one, which, however, contained no eggs. This, like the others, was formed on the outside with fine pieces of birch bark, but was placed between a small limb and the trunk

of a small cedar, about five feet from the ground. The general habitat of this species, according to my observations, is low, swampy woods, where there is an intermingling of evergreens with black ash, birch, water-elm, and other soft woods, and as it does not appear to make its advent here until the season is pretty well advanced, and the trees are putting on their summer garb, and as their food-seeking avocations are usually pursued high among the tops of the underwood, where they are well concealed from observation among the green foliage, so that even should man enter such places in the spring or early summer days, their existence would scarcely be known were it not for their pleasing song notes, which are warbled at this period with considerable clearness and animation. The majority of this species, however, appear to move on further north, where in deep, wild woods, little haunted by the human race, they find more secure and favorable breeding places, though from the causes above mentioned, more of them may nest in this province than is now supposed to be the case, and, from their haunts and habits, it may be also inferred that the smaller species of insects constitutes their chief food.

Nesting of the Great Horned Owl in Texas.

BY J. A. SINGLEY, GIDDINGS, LEE COUNTY, TEXAS.

This species, (*Bubo virginianus*), while not common, is still abundant enough not to be called "rare" in this county. I have located some eight or ten pairs in my range, covering a good day's ride. They frequent the uplands exclusively, and I have never found them in the bottoms. All the eggs of this species that I have found were in large nests built of sticks—sometimes a few leaves in the lining, but very often there was no lining except the down feathers from the breast of the Owl. They are very local in their habits, remaining in the same piece of woods and occupying the same nest, as a rule, year after year, even though the eggs are taken out every spring.

One nest that I found in February, 1883, contained young birds nearly ready to leave the nest. In passing the same nest again in the following March a Red-tailed Hawk, (*Buteo borealis*), flew off, and on going up to the nest I found it contained three eggs of that species. I have taken from this nest first a set of the Owls and later a set of the Hawks, each season during 1884 and 1885. This year the nest was deserted.

A nest found in 1885 that contained two young birds I visited January 30th this season and took

from it three eggs, so the same birds vary the number of eggs in different years. I took a set of two from another nest in 1885 and about two hundred yards from it I found a nest of the Red-tailed Hawk. This year (in February) I took a set of two owls from the hawks' nest and kept a sharp lookout to see if the hawks would complete the exchange by taking possession of the owl's nest; but they did not do so, preferring to build about a quarter of a mile further up the branch.

On April 13th I took the "second lay" (two eggs) out of the same nest where I took the set in February. Eggs on February 4th measured 2.21×1.79 and 2.19×1.81 . Those taken April 13th, 2.05×1.76 and 2.08×1.76 , the second lay being a little the smallest. The set of three taken January 30th averaged about 2.11×1.74 , their measurements being as follows: 2.15×1.76 , 2.12×1.74 and 2.07×1.73 . A set of two eggs of this species in my collection measure 2.33×1.83 , and 2.25×1.81 . These are the largest I have ever seen. They were collected in Kansas, April 4th, 1886, and the collector, (G. F. Brenninger,) in a note on the back of the data says, "This is second set of No. 405 taken from same nest." Probably the first set would average larger. Coues in his *Key* (revised edition) gives the size as "about 2.25×1.90 ." Davies, in the first edition of his *Check List of N. A. Birds* gives it as " 2.30×2.00 ." In his *Key to the Nest and Eggs of N. A. Birds* I see that Davis now follows Coues, and gives the size as above, " 2.25×1.90 ." I have yet to find a nest containing more than three eggs and would like to know if any collector has found from four to six.

[Mr. J. W. Preston, of Baxter, Iowa, found four eggs in one nest on March 1, 1881. (See ORNITHOLOGIST AND OÖLOGIST for April, 1886, Vol. XI, p. 53). This is a very unusual number, however, and two or three only are commonly found.—ED.]

White Eggs of the Bluebird.

BY B. W. EVERMANN, BLOOMINGTON, INDIANA.

In reading the article by W. E. Treat, in the April ORNITHOLOGIST AND OÖLOGIST, concerning white eggs of the Bluebird, (*Sialia sialis*) it called to mind a similar experience which I had with a pair of Bluebirds not long ago.

In the spring of 1884, I put up a box in my garden, at Camden, Ind., and it was soon appropriated by a pair of these birds. On May 5th I examined the nest and found five fresh, pure white eggs. Before taking the set I put up another box near by, hoping that when robbed of the first set they would go to the second box and lay again. Scarcely had the eggs been removed when the birds began carrying nest materials into the second box. I was curious to know if this set would

also be white, and watched them carefully. On May 14th, the first egg of this set was deposited, and the set of five completed on the 18th. These too, were pure white. I left them in the nest until the 20th, to see if the set was completed, and also to learn if the eggs were fertile. Five was the full complement, and, on blowing I found them all fertile. On May 21st the birds began rebuilding in the box first used by them, but from which I had removed most of the old nest. On my return home June 1st, after an absence of ten days, I found the nest completed and three eggs in it. Two days later there were five, all pure white, as had been the other ten. I could not make up my mind to take these eggs, but left them to be hatched. The old bird began sitting June 3d. Ten days later, while working in my garden I failed to see the male about. As I was accustomed to see him almost every day, I wondered what could be wrong. The next day I watched for him but saw him not. Then I went to the scantling upon which the box was fastened and struck it, but no bird flew from the nest. Something was undoubtedly wrong. Securing a ladder I climbed to the box and there, lying in the nest, was the decaying body of the female, and beneath her the five eggs, all more or less crushed and with embryos well developed. The true explanation, I believe, suggested itself at once. The vital economy of the female had been too severely taxed; the building of three nests inside of thirty days, the loss of vital energy incident to the development of fifteen eggs in a like length of time, followed by the no less arduous and exhausting labors of incubation, all these were more than the frail organism could accomplish and she died a martyr to her maternal instinct.

Notes from Silver City, N. M.

BY CHARLES H. MARSH.

November 10, 1885, while returning from a collecting trip I shot in a thick clump of bushes near my house, an Audubon's Warbler. The bird was a young male, though in very good plumage, and was certainly a very late migrant, as it had been nearly two months since the last of the Warblers had left this section, my last recorded observation being Sept. 15, when a few Pileated Warblers, usually the last to depart, were seen. In fact, on looking over my note book I do not find the Audubon's Warblers mentioned as being observed at all during the fall, being quite conspicuous for their absence, as they were the most abundant of the Warblers in this neighborhood during April and May.

The fall of 1885 would seem to have been specially marked by the presence of Albinos in this section. In the latter part of August I noticed for several days an apparently wholly white Barn Swallow in a large flock of these birds flitting about in a meadow near my house.

Early in September a neighbor reported having seen a pure white Gambel Quail, "even to the top-knot," as he said, among a bunch of quail in a rocky cañon, some six miles from my house, and after the first report he mentioned having seen it several times. The next report of an albino came from the prairie, some eight miles in the opposite direction, where it was seen, leading a flock of Scaled Quail as they ran from a bunch of cactus near the roadside on the approach of the wagon in which my informant was riding, the first and only time that it was seen to my knowledge. Late in October several parties reported that they had seen a white quail in a flock of Scaled Quail, crossing the road from a meadow to the adjacent hillside, within a quarter of a mile of my house.

A few days after the last report I was passing the spot on a visit to a neighboring house, for the first time in six months without my gun, when from a clump of bushes in front of me ran the quail, and sure enough among them a white one. I had a fine opportunity to examine it, as the birds were very tame and walked leisurely up the hillside. It was nearly a pure white, with an occasional feather of the usual color and some with a slight bluish shade. For some time after that I carried my gun whenever I passed that locality, but was never favored with a glimpse of the bird again. Mentioning the fact to my friend he told me that he could probably account for it as R—, an ardent sportsman of the place, though not a particularly good shot had told him that he had shot at a white quail a few days before, and though he found a handful of feathers, could not after a thorough search discover the bird. The probability was that being badly wounded the bird had secreted itself somewhere and died.

I think that the Say's Pewee may safely be classed among the winter residents of this section. All through the cold winter months of 1884-'85, when there were an unusual number of snow storms and a great deal of blustering, disagreeable weather for this country, I noted quite a number of Say's Pewees in sheltered spots, and about the ranches and corrals. Again in 1885-'86, or up to the time I left the locality in the latter part of January they were quite abundant, though all the other Flycatchers had de-

parted several months before. The greater part of the time during the winter the days are mild and pleasant, and there is quite an abundance of insect life, so that they would fare well enough, but occasionally, almost without warning, a cold storm would set in of several days, or a week's duration, and then their allowance must have been scanty.

Dates of the Arrival of Migratory Birds in the Spring of 1886, Central Park, New York City.

BY A. G. PAINE, JR.

(Concluded from page 109.)

May 10, *Piranga erythromelas*, (608). Scarlet Tanager.

May 10, *Actitis macularia*, (263). Spotted Sandpiper.

May 10, *Botaurus lentiginosus*, (190). American Bittern.

May 11, *Troglodytes aëdon*, (721). House Wren.

May 11, *Sylvania mitrata*, (684). Hooded Warbler.

May 11, *Turdus fuscescens*, (756). Wilson's Thrush.

May 11, *Empidonax minimus*, (467). Least Flycatcher.

May 11, *Icterus spurius*, (506). Orchard Oriole.

May 11, *Tyrannus tyrannus*, (444). Kingbird.

May 11, *Empidonax flaviventris*, (463). Yellow-bellied Flycatcher.

May 11, *Icteria virens*, (683). Yellow-breasted Chat.

May 11, *Dendroica blackburnia*, (662). Blackburn's Warbler.

May 11, *Sylvania canadensis*, (686). Canadian Warbler.

May 13, *Helminthorus vermicorus*, (639). Worm-eating Warbler.

May 14, *Sylvania pusilla*, (685). Wilson's Warbler.

May 16, *Dendroica striata*, (661). Black-poll Warbler.

May 17, *Helminthophila pinus*, (641). Blue-winged Warbler.

May 17, *Passerina cyanea*, (598). Indigo Bunting.

May 19, *Trochilus colubus*, (428). Ruby-throated Hummingbird.

May 20, *Chordeiles virginianus*, (420). Night-hawk.

For some additions to this list, credit is due to Mr. L. B. Woodruff and Mr. E. T. Adney.

ENTOMOLOGY.

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73 Hanover St., Boston, Mass.,

ASSOCIATE EDITORS.

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Larvæ Hunting.

BY PAUL REVERE.

The season for hunting larvæ is at hand, and the hunter with a trained eye does not find it difficult to discover the caterpillar he is in search of. The essential thing is first, to know what one is looking for; and second, to know where to look for it.

The larvæ that produce the rarest moths are now being sought for by entomologists. The caterpillar which makes the Regal Moth (*Citheronia regalis*) is one of these, and is, without a single exception, the largest caterpillar that is found in New England. Its preferred food is the foliage of the butternut tree. When full grown the caterpillar measures from $4\frac{1}{2}$ to $5\frac{1}{2}$ inches in length, from $1\frac{1}{2}$ to $2\frac{1}{4}$ inches in girth, and has half a dozen formidable looking horns near the head. When disturbed he throws his head to and fro angrily, but is perfectly harmless, although the average farmer thinks he is as venomous as a checkered adder and "pizen" to any one who dares handle him.

A parasitic fly harasses this caterpillar and deposits a score of eggs in its skin. The exterior of the egg hardens while the side next the body is kept moist and soft, and when the grub leaves the egg its easiest way out is into the living tissues of the caterpillar, upon which it feeds, instinctively keeping clear of the vitals until it has reached its growth, the worm or pupæ dying from exhaustion.

These seeds of death, which are to be found on the skin of seventy-five per cent. of the half-grown larvæ, first command the attention of the entomologist, who carefully removes them. If the grub has not left the eggs the caterpillar is worth raising, but if they have entered the tissues of his body the caterpillar may as well be left on the tree, as it is time thrown away to care for him.

These caterpillars are solitary in their habits and it is not often that half a dozen can be found on a single tree. They are sometimes found upon sumach, and when reared from the egg, sumach is the most reliable food, as butternut foliage withers quickly, no matter how much care is taken to keep it fresh.

When found half or nearly grown the food

should not be changed, but the larva should be sustained with the same foliage to which it has become accustomed. They may be kept in a nail keg or half barrel with three or four inches of earth on the bottom. This earth should be baked before being placed in the barrel or keg, that all insect life may be destroyed. The receptacle may be covered with cotton cloth. In a cage of this simple construction a friend of mine bred forty in a season from the egg.

Another is the White Pine Worm, the larvæ of the Imperial Moth, (*Eacles imperialis*) a caterpillar that grows three or four inches in length, is plump in form and apple green in color, with short orange-colored spines, longest on the thoracic segments. It is more plenty than *regalis* and less subject to attack from parasitic flies. It also feeds on the hickory and the maple. I have taken eighty of the caterpillars in a pine grove and the best looking and largest larvæ I ever saw fed upon maple. These have to be bred the same as the first, with earth to burrow in. These moths are rare and are an ornament in any collection. They are also readily exchangeable for American or foreign lepidoptera.

The Cicindelidæ of New England.

BY L. E. HOOD.

Few are the collectors who have not a strong admiration for the beetles which constitute this genus.

With their beautiful bronze colors, fine shape and active habits the Cicindelidæ are well worthy of all the attention given them, and beginners should try to form as complete a series of local species as possible.

The New England species are numerous and easily determined by their color, the marking of their elytra and size. Some are of a greenish bronze color, with dots along the sides of their wings like the *C. scarguttata*, others are of a brown color with light lunules and spots like the *C. vulgaris* or common cicindela, others are very dark with numerous punctures like the *C. punctulata*, while *C. dorsalis* Say, is nearly white. With such a variation of colors and distinct markings it is generally an easy matter to find their respective specific names. But some species vary so much that great care must be taken not to make mistakes, and as in other families a knowledge of the minute species are necessary.

C. purpurea, *C. scutellaris* and *C. scarguttata* are especially noted for the variations of colors and marking, the first named species especially being remarkable, no less than ten varieties being recog-

nized. The Cicindelidæ are lovers of warm, sunny places, and the sandy roads are favorite habitats with most species. *C. vulgaris*, *C. purpurea* and other species can be found on country roads and sand hills, especially where men have formerly dug the sand. Others, like the *C. sex-guttata*, love the woody roads and are often found in forests, on rocks and in the grass along the paths. I have found many under rocks.

C. generosa I have but rarely seen; it is not common on my collecting grounds. It is a variety of *C. formosa* Say. *C. dorsalis* Say is very common on Long Island Sound in Connecticut. It is a nearly white species with a dark head and thorax, with greenish marks on elytron; lives near the sea, but I have rarely seen it in Massachusetts. They are rapacious, prey on other insects, and for this, with their active motions, they have been termed the Tiger Beetles.

When you are walking along a road, you will notice them flying before you. When startled they only fly a few yards and then light on the road again, with head turned toward you, after flying away once or twice they sometimes make a quick curve around you and fly back to the point where you first disturbed them, but this is not always the case. Often I have seen them fly away to the right or left and leave the road you are on for quieter places.

A net is required to catch them, and it is a good idea to put them in the cyanide bottle alone, for if you do not they are liable to catch some beetle in their strong mandibles and destroy it. It is best to empty the bottle of other specimens before you begin to catch the "tigers."

In the larval form they are also rapacious and live in the sand, on which they will as beetles live and die. It is easy to get the larvæ, by gently pushing a straw down the hole, at the bottom of which they are lying in wait for the luckless insect that may cross the mouth of their cavern. As soon as the straw reaches them they will bite it, and as they will seldom let go, you can readily bring them to the surface.

I have reared one or two specimens, and much enjoyment may be derived from such study. It would be well, both for the student and science, if more amateurs would make a specialty of rearing Coleopterous larvæ.

Those who desire to determine their species should procure Mr. F. G. Schaupp's Monograph, published in 1884 by the Brooklyn Ent. Society, as it will prove a most valuable work.

I have collected in the past few years about thirteen species of *Cicindela* in New England, and for the benefit of the beginner who may be in-

terested to know what species are local I give a list, with notes on the occurrences of the species. I wish to add that these notes are of my own individual experience, and may vary from others at different localities.

Cicindela vulgaris, Say. Very common everywhere.

C. repanda, Dej. Not common.

C. purpurea, Oliv. Several varieties are found. Some common.

C. sex-guttata, Fab. Common.

C. scutellaris, Say, (var-rugifrons, Dej.) *C. scutellaris*, Say, (var-modesta, Dej.) Somewhat scarce in Western Connecticut.

C. unipunctata, Fab. Western Connecticut. Not common.

C. longilabris, Say. Rare; I have only found one specimen, near the White Mountains.

C. hirticollis, Say. Fairly common.

C. punctulata, Oliv. Very common.

C. dorsalis, Say. Common on the shore along Long Island Sound in Connecticut, rare in Massachusetts.

C. marginata, Fab. Have found but one specimen, near Lynn, Mass.

C. puritana, Horn. Rather rare in Northern Connecticut.

C. hentzi, Dej. Fairly common.

The Vivarium.

BY CYANIDE.

As many collectors will desire to rear a number of their own specimens, and a majority of the choice larvæ can yet be taken, a few words on this subject will not be amiss. The most essential point is to have all the conditions as natural as possible at all seasons. With the ordinary vivarium, I have experienced a great deal of difficulty in doing this, particularly in the winter, especially with those larvæ whose transformations are subterranean. The earth was apt to be either too wet or too dry at times, and if the pupæ were placed on damp moss they were liable to become coated with a mould or fungus, that invariably proved fatal. To avoid all this I have adopted a (to me) new method. I have built my vivarium large enough to accommodate all the larvæ I expect to rear, having the bottom open and set it on the ground with the lower edges buried three or four inches. My water bottles for food plants are buried in the earth, as in the portable ones. As soon as cold weather sets in, I will stake the corners and remove the box entirely, replacing it next spring with another, about a foot larger each way, so that any stragglers that may go down

under the edges of the old will be sure to come up inside of the new one. In this way the pupæ will be exposed to all the natural conditions during the cold weather. Of course I expect to lose some specimens by the attacks of coleopterous larvæ, but I do not think the mortality will nearly equal that attending the old method. The plant food should be procured fresh every day if possible, but if the pieces are large they will sometimes remain fresh for two or three days. Always be careful to keep the vivarium clean and the bottles filled with water. I think that a lack of water is more fatal to most larvæ than a scarcity of food. If you doubt it, take some that have been shut up without either for a day or two and give them some of their food in the morning while covered with dew, and see them travel from drop to drop, drinking with a seeming relish and not attempting to eat until their thirst is quenched.

With regularity and care in attending to their wants, you will be surprised to find how easily and pleasantly you can raise Lepidoptera.

Literary Note.

Messrs. J. B. Lippincott Co. have in press a "Manual of North American Birds," by the eminent Ornithologist, Prof. Robert Ridgway, Curator Department of Birds, Smithsonian Institution, Washington, D. C.

The author has had unrivalled advantages for the preparation of a treatise of this character, arising from his own field experiences, as well as his connection with the National Museum, and the free access which has been granted him to various other public and private collections of birds, both in this country and Europe.

The work is to contain some 425 illustrations suitably executed, and will conform to the geographical limits, classification, numeration and nomenclature adopted by the American Ornithological Union.

We doubt not it will be one of the most important, thorough and original contributions to the literature of the subject which has ever appeared, and presume that Naturalist and Sportsman alike will find in it an invaluable aid.

CORRESPONDENCE.

A Protest.

EDITOR ORNITHOLOGIST AND OÖLOGIST, SIR: Ever since the inception of the ORNITHOLOGIST AND OÖLOGIST as a magazine of bird-life I have watched its career with a growing interest, until at present I see a possible future of usefulness unapproachable by any other periodical in the same science. This future lies with our American ornithologists, not in a financial sense, for I think nearly all are subscribers at the present time, but it could be made of a far more influential character if they would favor it with contributions of scientific interest instead of withholding them from a purely selfish motive. The ORNITHOLOGIST AND OÖLOGIST is not a rival of *The Auk*, and our ornithologists need a monthly magazine of the sciences, and thus publish when fresh the news from the field or closet work. I remember some of the former contributors to this magazine,

whose frequent articles were of interest, but on the forming of the A. O. U. into which certain of them were absorbed, I noticed that those who were taken into that association ceased their articles, and no reason save an attack of "big head" can I give. I protest against such sectionalism amongst our ornithologists. Our delightful and ever increasing science furnishes more than enough for both magazines, and a great deal of benefit would be derived if some of our scientists would recognize the influence of this magazine.

I do not wish to be understood as considering the ORNITHOLOGIST AND OÖLOGIST of less value than formerly. On the contrary, it never was better than in 1886, and each issue seems to improve, and it is for the benefit of my fellow-members of the A. O. U. that I publicly express my views, that they may take advantage of this monthly interchange of notes on ornithology. I notice with pleasure that a former contributor, and a prominent scientist, had excellent articles in the last issues. I congratulate the ORNITHOLOGIST AND OÖLOGIST upon its prospects. From a personal knowledge of the present management, I can safely say, if business energy, and scientific ability, combined with a long purse, are indications of success, then the ORNITHOLOGIST AND OÖLOGIST is certain to prosper. I beg your pardon, Mr. Editor, for the space I have occupied; my proper place would have been in the pages of my association "organ," but knowing I could not gain access there with the above "correspondence," I resorted to your columns.—A member of the A. O. U.

"Amateur."

EDITOR ORNITHOLOGIST AND OÖLOGIST, SIR: In *The Auk*, for July, 1886, David S. Jordan has a criticism (?) of *The A. O. U. Code and Check List of North American Birds*, and I quote from it the following passage: "In spite of a good deal of amateur work, which in one way or another gets published, it is, I think, not too much to say, that in all the various matters which make up the groundwork of systematic science * * * American ornithology stands at the front of systematic science." You will please note the slur cast upon the amateur and his work. Such is the case with nearly all of the scientific writers. The amateur is abused and nearly every evil is laid at his door. Why is it thus? The question needs no answer. The selfish motive of the professional is too apparent. The amateur is called into service in recording migration and statistics, but no credit is given him; he collects stomachs of birds at request, and when fined for shooting birds by his county official, the scientific committee for bird protection, pause long enough from their work at a heap of slaughtered victims, to applaud the act.

I hope to see the amateur recognized according to merit. Although my last birthday was my forty-seventh, yet I deem myself but an amateur, and can remember very vividly the amateur days of some of the gentlemen now considered as ornithologists in the "high science" term of the word. It would give me a great deal of satisfaction to record some of their crude work and blunders.

The efforts of your caustic pen, Mr. Editor, in their behalf will be appreciated, for in a few years, when these amateurs, by reason of profitable time spent in research, shall become the equal of any of the scientists, they will not forget your magazine, which so ably defended them, and then your reward will be sufficient.—R. C. M.

In the prosecution of "The Botany of Birds' Nests," which will appear in these columns, we would like to communicate with parties, of whom we can procure nests.

SEPTEMBER, 1886.

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VOL. XI.

BOSTON, MASS., SEPTEMBER, 1886.

No. 9.

Some Ornithological Explorations in the Dead River Region of Maine.

BY F. H. CARPENTER.

(Continued from Page 113.)

16. *Mniotilta varia*, (Black-and-White Creeper). The only individuals of this species were a few observed in a maple orchard at New Vineyard in the latter part of August. They were at the time evidently migrating.

17. *Helminthophaga ruficapilla*, (Nashville Warbler). A common summer resident of the county, more often observed among the mixed growth of the Dead River valley than elsewhere, though it might have been overlooked in the heavily timbered forests of the northern portion. They were breeding among the scrub on the "plains" between Eustis and Stratton, as the actions of the birds testified, but diligent search failed to discover a nest. Young birds were also frequently seen in August.

18. *Helminthophaga peregrina*, (Tennessee Warbler). Although I have never seen this species in either Franklin or Somerset counties, yet a record of its occurrence a few miles over the line in Oxford county might be of interest, as the records of this bird are very limited. One was shot, while in company with several Blue Yellow-backs at the Upper Dam, Mooseluckmaguntic Lake. They kept entirely to the spruce trees and it was by the peculiar and differing manner of flight, that *H. peregrina* was singled out from among his companions as a victim.

19. *Parula americana*, (Blue Yellow-backed Warbler). This species was commonly observed in both spring and summer, being more conspicuous from their habit of keeping in small flocks, even in the breeding season. In a small spruce grove, which contained many old moss covered trees, on Kennedy Smith's farm in Eustis, I found several nests of this Warbler. They were the usual structures, of *usnea* so well known wherever this species breeds, being on the whole more

round than those observed in Massachusetts and more compact in structure. The nests were in every instance built entirely by the birds, and pendant from some branch entirely destitute of other moss. Such is not always the case in southern New England, the birds taking possession of some natural branch of the hanging moss, which, with but a little effort, they transform into an apology for a nest, scarcely worthy of the name when compared with those from the Maine forests.

20. *Dendroica aestiva*, (Yellow Warbler). This lovely Warbler was found in nearly all portions of the counties. It preferred the vicinity of habitations, and was not observed at all in the ever-green forests. Its nidification was twice observed at Kingfield, the nests in each instance being placed in a crab apple tree.

21. *Dendroica caerulescens*, (Black-throated Blue Warbler). I had fully expected to find this species one of the most abundant Warblers of the region but such was not the case. Only three instances of positive identification was recorded, these being a pair breeding on Mt. Bigelow, a male secured at Jerusalem and a young male seen at Stratton. I thought I detected the notes of this bird while walking along the "tote" road from Smith's farm to Tim Pond, but am not positive. The nest of this species found at Mt. Bigelow was placed in the forks of a bush of the mountain blueberry, scarcely raised from the ground; both birds were at work upon it, giving it the finishing touches of a master hand, or bill.

22. *Dendroica coronata*, (Yellow-rump Warbler). This well known species was found in all situations of the northern portion of the counties; seeming to be about evenly distributed in both forests and clearings. In a birch, at the lower end of Beaver Bog on Hack Inlet, was found a nest of this species. It was composed of fine grasses interwoven with a few feathers and flaxy shreds of some plant, with a lining of rabbit's hair and feathers compactly pressed into shape. It contained on June 7th four fresh eggs, white

with a perceptible bluish tint, marked about the larger end with flecks of dark brown. Measurements are as follows: .70x.51, .70x.50, .69x.51, .67x.49.

23. *Dendroica maculosa*, (Black-and-Yellow Warbler). Fairly common in certain localities, being rather erratic in its movements. It is quite common around Jim Pond, just back of Eustis, and a few were seen near Black Mountain. For several days none of this species would be seen, and again at certain places they were to be found in considerable numbers, seeming to be restricted in their movements to the forests which contained a certain admixture of hard wood growth. No nests were found, but satisfactory proof of their breeding was not wanting. A nest found at Umbagog, June 6, '82, was placed in a hemlock shrub and was composed of grass and fine bits of hemlock strips lined with a few bits of hair and a single fluff of cotton and an inner lining of horse-hair, though how they procured the two last named materials is beyond my comprehension. It contained only three eggs, of a creamy white spotted with a few blotches of brown in form of a wreath at the larger end.

24. *Dendroica pennsylvanica*, (Chestnut-sided Warbler). A gentleman in Farmington showed me a nest and four eggs which were undoubtedly of this species. They were taken at Wilton on June 12th. I am positive I heard the song of this species, while riding from Farmington to Strong.

25. *Dendroica castanea*, (Bay-breasted Warbler). This species was observed commonly about Flagstaff Lake, but I failed to observe it in any other section of the counties. It was one of the species whose nidification was observed to an advantage, two nests being found near the shores of the lake and not far from our camp at the inlet. One nest was placed on the branch of a hemlock about ten feet from the ground and was composed outwardly of the fine twigs of the larch, a few lichens and grass stalks, compactly lined entirely with fine hair and a few feathers, which I find to be the usual lining of the nests of the Warblers of this region. It contained four eggs, bluish green in color, two of them profusely spotted with brown, while in the others the spots tended to form a wreath about the larger end. Dimensions as follows: .68x.52, .68x.52, .66x.50, .66x.51.

26. *Dendroica striata*, (Black-poll Warbler). Observed commonly during the migration the second week in June.

27. *Dendroica blackburnie*, (Blackburnian Warbler). Some of the most pleasant reminiscences of my sojourns in this country are associated with this beautiful Warbler, who was found here in all

the richness of his breeding plumage and in the busy occupation of domestic cares.

On the morning of June 10th, as the first streak of gray was visible in the east we left the little post village of Stratton, on our toilsome journey to the heights of Mt. Bigelow. Along the river valley lay heavily the morning mist, through which the solitary hemlocks, scattered here and there in the clearings, loomed up like the pyramids along the Nile, as we tramped through the dew-laden grass to the forest edge. The trail was easily found and with a scarcely perceptible rise we walked on under the oaks and birches until we reached the "first look-out," where a glance at the surrounding country told plainly that our steps had been upward as well as onward. While we rested here for breakfast the aspect changed, over Mt. Kennebec the rising sun appeared, covering the hemlock tops with a halo of glory, while their sombre shadows presented a yet stronger contrast and the river valley seemed like some beautiful picture framed with a moulding of black and gold. The avian concert was not lacking. From the tree tops the Hermit Thrush gave vent to his exuberance of spirits in an exquisite song. The pleasing song of the Junco, and the whistle of the White-throated Sparrow blended without discord as they hobnobbed together on a decayed log in plain view of us. The Chickadees apologized for their musical deficiencies by a display of familiarity, far exceeding their more southern congeners. As we continued on our way, now growing steeper and more difficult, a Canada Jay, brimful of curiosity followed us for a considerable distance, but save for an occasional flirt of its tail, uttered no disapproval of our actions, but soon a hoodlum band of his blue brothers came trooping noisily along, and pouncing upon him drove him away. Evidently the question of faunal areas had been discussed in Jaydom and Mt. Bigelow was unquestionably within the domains of *C. cristata*. Ere long we entered the evergreen growth and leaving the path we picked our way the best we could over the fallen trunks on a short cut to the summit. The bare rocks and blueberry patch of the "knob" was reached in due time (not being a professional mountain climber I decline to state the time occupied in the ascent) and the magnificent panorama of the country from Moosehead to Umbagog lay before me, with its numerous lakelets like diamonds connected with rivers of silver thread. The descent was begun early on the following morning that more time might be taken in exploring the mountain side than on the day previous. After about half an hour's walk I halted for a moment on a steep bank of gravel

and small boulders to enjoy the fine view to be there obtained. How rapid is the change from the sublime to the ridiculous. On stepping forward a pace, the stone on which I was standing gave away and in the endeavor to regain my footing, a small landslide precipitated me in a very undignified manner down the declivity until I "fetched up" under a large hemlock. Fortunately my body was covered with gravel instead of bruises, and in a comfortable position I remained for a brief period, resting from the effect of my rapid transit. A slight movement among the lower branches of the tree caused me to look up and soon I saw eyeing me closely a male Blackburnian Warbler. Any motion on my part would cause him to bestir himself in an agitated manner, and when I arose to my feet he disappeared. Patient watching was rewarded by seeing the bird fly into the top of the hemlock, when the small commotion which ensued caused me to believe that a nest was therein placed. Casting off all superfluous clothing I began the ascent, a laborious task, but the end proved my conjecture aright, for a nest of this Warbler was placed on a limb at about sixty feet from the ground. It was composed outwardly of hanging moss (*usnea*) woven compactly with a few bits of fine bark and twigs, lined with the usual material, hair and feathers. The eggs were four in number, nearly fresh. They were spotted sparingly with reddish-brown over the entire surface, with the addition of a wreath of same color about the larger end. Dimensions of the set are as follows: .66x.51, .66x.50, .65x.51 and .64x.50.

(To be Continued.)

Notes on Some Birds of the Great Smoky Mountains.

BY ARTHUR LEMOYNE, M. D.

(Continued from page 115.)

GEOTHLYPIS FORMOSA.

Kentucky Warbler.

This species was one of the most difficult to observe of any of the Warblers, and save for its well-known song I should not have been aware of its presence for many days at a time. These birds first arrived in Monroe County on April 16th, when a single specimen was seen. I do not think I saw more than fifty individuals during the entire season, including the whole territory visited. The few that were seen and heard were found in the mixed growth at about the line where the two lower faunæ come together, the majority seeming to prefer the Carolinian. The chief point of interest about this species was its

"invisibility," and often when surprising an individual or a pair by suddenly coming upon them, they would immediately betake themselves to parts unknown, if not remote. I have never noticed this extreme shyness in other localities where I have observed these birds. The principal reason for an especial mention of this species, was the discovery of its nest in June, 1881, in Blount County. It was placed amongst the tall weeds growing along the edge of a corn-field, and was about three inches from the ground, being inserted in the dry and partly decayed rubbish of the previous year. The nest was outwardly composed of very fine strips of bark, a few shreds of flax, together with small dry leaves and fine rootlets, lined with a few horse hairs and very fine rootlets. The eggs were four in number, crystal white spotted with bright brown, in form of a half-defined wreath about the larger end. Measurements of the above set are as follows: .72x.54, .71x.54, .71x.53, .70x.52.

SYLVANIA MITRATA.

Hooded Warbler.

This species was like the preceding, quite sparingly found. Arriving in Monroe County on April 18th, they were found after that date in limited numbers. They were birds of decisive movements; not often did I observe them otherwise than when traveling from tree to tree in the forest, displaying at such times all the restlessness of birds in migration, and conspicuous by both song and activity. They frequented the forests and old fields at altitudes ranging from 2,500 feet up to 3,300 feet. At the latter range they were very sparingly found, and none observed higher, save a single specimen secured near the "black growth" on Great Smoky Mountain, at an altitude of about 4,500 feet.

As I confine the present series of articles to those, treating on the birds found breeding, I give a brief account of a nest found three years ago in Monroe County, on June 3d. It was placed in a scrub oak about three feet from the ground, and was worthy of especial mention from the quantity of flax which was used in its construction. A strip of fine bark and bits of moss also entered into its composition. The eggs were four in number, of a faint creamy white, spotted with reddish-brown and lilac congregating about the larger end. Dimensions, .65x.48, .65x.47, .64x.47, .64x.46.

Another nest of the same species was placed in a similar position, but was much coarser in composition, being constructed of bark strips, leaves and grasses and lined with fine grasses. It contained four eggs, nearly fresh on June 9th. They differ somewhat from the above set, in having

the spots pretty evenly distributed over the entire surface of the egg. Measurements were as follows: .67x.50, .66x.50, .65x.49, .65x.46.

SYLVANIA CANADENSIS.

Canada Flycatcher.

This is another of the species which prefer the higher ranges of the mountains. It was first seen in Monroe County on April 21st. At that date it was common in the valleys and borders of cultivated fields. In a short time their numbers diminished in such places, and on search I found them in the hard wood growth on the mountain sides, at about 2,500 feet, where they were seen industriously foraging for insects. By the first of May scarcely any were to be found in the lower valleys and their range had extended up to about 4,000 feet. During the second week in May they appeared to be mating and were often heard at their best in song. In early morning a male would mount to some convenient limb and pour out his simple, pleasing melody; at the first outburst of his song, other males perhaps fearing lest some rival would gain an advantage, would fly to similar positions and each would evidently strive to outdo his neighbor, then suddenly the concert would cease and they would join the females on the ground or lower branches, until some one would renew the declaration of his passion, when all would join in one wild-wood's chorus. By the last of May these warblers were evidently settled for the summer, and I was surprised to note the extent of country they occupied, being found from the mountain tops down to 2,500 feet—the majority seeming to frequent the rhododendron thickets at about 3,500 feet. During the eleven years I have annually visited some portions of this county I have found several nests of this bird. The nest is more shabbily built than one would suppose such a dainty creature would mould. The best specimen of their architecture I have ever seen was a nest composed of small leaves, very fine bark shreds, with a few fine rootlets, and a few horse hairs. All grades from the above have been noticed, down to one scarcely more than a mere hollow, in a bunch of dry leaves, caught at the foot of a clump of berry bushes, lined with a few rootlets. The eggs are to my eye very handsome. A set taken June 6, 1886, are white, spotted with well defined specks of different shades of brown, some grading into a purplish tint, tending to congregate into a wreath about the larger end. In other sets the eggs are spotted over the entire surface. Dimensions of above set: .76x.57, .76x.56, .74x.54, .75x.54. Another set taken June 4, 1883, contained one pure white egg. Measurements of the set of four as follows: .74x.53, .74x.52, .73x.52, .69x.48. The white egg being the smallest.

(To be continued.)

Notes on Some Birds of the United States which Occur in the Mexican Fauna.

BY JUAN RENARDO.

[Translated from the Author's MSS., by F. H. Carpenter.]

(Continued from Page 117.)

Vireo flavoviridis, (Yellow-green Vireo). Not commonly observed. Specimens were collected at Tampico and Merida in the autumn. Have seen them in summer very near the Rio Grande, where they probably breed.

Vireo gilvus, (Warbling Vireo). Often observed in numbers about Tampico, and in winter as far south as Merida they are common.

Vireo solitarius, (Blue-headed Vireo). I did not observe this bird as frequently as one would suppose. A few were taken along the Rio Grande in late autumn. In mid-winter I have seen them between Merida and Guatemala.

Vireo solitarius cassinii, (Cassin's Vireo). Two were taken near Guaymas in summer which bore marks of breeding. They are fairly common in autumn when passing south.

Vireo atricapillus, (Black-capped Vireo). Common in the breeding season. Have found nests in the Rio Grande valley. Seen in winter about Campeche.

Phainopepla nitens, (Phainopepla). Notwithstanding the reports of this species being common in this country, my only specimen noted is the one sent, which was taken about ten miles from Tampico.

Tachycineta thalassina, (Violet-green Swallow). Seen on the high mesas in summer. They breed near the Rio Grande in the dead trees, caused by the over-flow of water.

Progne subis, (Purple Martin). Common in flocks in autumn and spring near Tampico. Some are seen in winter near Merida.

Piranga ludoviciana, (Louisiana Tanager). Quite common about Campeche in early winter, but very shy and difficult of approach.

Euphonia elegantissima, (Blue-headed Euphonia). The specimen sent was taken at Saltillo, May, 1883.

Passerina versicolor, (Varied Bunting). A common resident. Breeds. Observed at Merida in winter.

Passerina cyanea, (Indigo Bunting). One taken at Campeche in winter. Not often observed.

Guiraca caerulea, (Blue Grosbeak). This species breeds along the Rio Grande in limited numbers. It occurs about Merida in winter.

Habia melanocephala, (Black-headed Grosbeak).

Occurs here about the same as the preceding, though on the whole were common and local.

Pyrrhuloxia sinuata, (Texan Cardinal). A common resident. Breeds in the northern portion. Observed in winter.

Pipilo fuscus mesoleucus, (Cañon Towhee). A common summer resident of the Rio Grande valley and some distance southward. Breeds.

(To be Continued.)

A Day Among the Ospreys.

BY F. W. ANDROS, TAUNTON, MASS.

Our former trips to the "Osprey Colony" on Palmer's River, had been so successful and pleasurable that we planned another early the past spring. The party consisted of my friend Mr. F. H. C., my brother Mr. C. H. Andros, and the writer. We concluded we would celebrate the thirteenth anniversary of our friends' visits to this colony by making the trip on May 10th. Accordingly, with this purpose in view, we met on the evening of the 8th, at our friend's house, where arrangements were made for our trip, a rough sketch of the territory we were to visit was made on paper, climbers were put in good shape, hunting suits placed in their appointed corner and plans laid for a successful day's work. The following day being Sunday we laid over and rested, but impatient for the 10th to appear, we retired early and arose at 12.30 a. m., and donned our hunting rigs, then prepared for the trip by sitting down to a hot breakfast, after which we gathered together our climbers, ropes and knapsacks and left the house before 2 a. m., taking a road which led us south some eight miles or so, all the while descending gradually into a large valley through which the Palmer's River flows, over which we crossed several times owing to its winding course. Before we enter upon the trip proper, I will give a brief description of the nests. These are placed in open fields or along the roadsides, as well as in thickly wooded swamps, frequently a considerable distance from any water, but generally within a short distance of some stream or pond. They are composed of a large mass of sticks (of all sizes), twigs, brush and rubbish heaped together, regardless of external appearance, and lined with sea-weed, twigs, cedar bark, eel grass, corn-stalks and other materials, the whole forming an immense structure ranging from four to six feet high and as many across the top, on which one can safely seat himself and pack the contents at his leisure,—said top having been reached. These immense structures are added to in the fall of each year for the purpose of strengthening them so as to withstand the winter storms, and

are repaired on the return of the birds in the spring. This necessarily increases their size each year and serves as a good indication of their age. Various trees are selected for building purposes—walnut, oak, chestnut, locust, elm, buttonwood, pine and others—no partiality seems to be shown on this score, the main object being to place the nests out of reach, and it is quite successfully carried out, too, for it takes an expert climber to ascend to half of the nests in the colony. Some are actually impossible to be reached, while others overhang to such an extent that it would only be risking life and limb to attempt to get them. The height at which the nests are placed varies considerably, according to location; from twenty to eighty feet would cover those in the northern section of the colony. Those in open situations were, as a rule, placed the highest from the ground, and were as well the most difficult to reach; while the contrary has been observed where the nests were placed in unfrequented or secluded swamps. These nests are very deceptive in appearance, even when viewed from a near standpoint, but by climbing up to the structures one can form a very good idea of their size. The nest having been reached—the easiest part of the journey—the question arises how to reach or get over into it, which is the most difficult part of the job, especially when the climber is fifty or more feet from the ground, near the top of a dead tree that shakes with every prod of the spurs.

The Ospreys are welcomed on their return in the spring and protected by the farmers, to whom they have proved beneficial in more ways than one. They hunt over their pastures for field mice, frogs, toads and snakes, and protect the farm-yard from the onslaughts of the other Raptores, when their nest is placed near by. These birds are erratic in their movements when continually disturbed, frequently leaving their homes and re-building at some distance, and often in another colony. We had now reached the colony, which is spread over a large territory and contains no less than two hundred nests, and it still lacked an hour of daylight, but we entered a large pasture and crossed to a large spreading chestnut tree which has held an immense nest for several years. All was still. The tree was rapped smartly with a stout stick but no response from the nest, neither could we make out the form of a bird in it. This we were not very much surprised at, for it is difficult to cause them to leave their nests during the night. It held a set of two eggs on May 8, 1885, so heavily marked with dark brown as to conceal the ground color, but from appearances was deserted this season. Soon the gray of dawn appeared in the east and the

nest loomed up on all sides, and when inhabited the heads of the sitting birds could always be seen at some distance rising above the centre of the nest like the knob on a Tam O'Shanter cap. Ospreys were soaring in graceful circles overhead at various heights scanning with watchful eyes the river below, while others were shaping their course to and from their hunting grounds; at such times flying with a steady flapping of the wings and an occasional sail. Frequently we saw the birds plunge headlong from a dizzy height on their prey, striking the water with a heavy splash and throwing the spray in all directions. Only a few seconds elapse before the bird rises, clutching her quarry in her talons, and either carries it to her mate or some favorite perch where it enjoys the feast alone. They invariably carry their food in their talons, parallel with the body, the right foot a trifle in advance of the other. They also preserve the same rule in carrying large sticks to their nests when building, (so as to cut the wind and not be a hindrance to their flight,) and may be often seen flying with sticks extending far out in the rear.

A nest placed forty feet up in a tall locust in the rear of a farm-house could have been easily reached but for the following inscription placed on a board fastened to the tree: "Beware; no trespassing on these premises." We followed a cart path for some distance along the edge of a swamp, which we soon entered and made our way as best we could through the dense growth of briars and saplings to the foot of a large leaning ash. The parent bird arose from the nest as we drew near, uttering its note of alarm, and flew around overhead. The nest was placed forty feet from the ground and was reached by ascending on the upper side of the trunk, which was none too steady. It contained two very dark colored eggs, the same number and shade of color as laid the two previous years in the large chestnut tree in the open field just spoken of. This set was packed in a "patent box" prepared for the purpose, and let down to the ground and repacked in a separate box by 3.30 a. m. This was a new nest and built and inhabited by the same pair who formerly held possession of the chestnut. We retraced our steps and crossed ploughed land to a large oak, which held a clean, well built nest, saddled to a horizontal limb ten feet from the trunk. This was reached by C. H. A., who brought the set of two small eggs down in his felt hat. These differed so greatly in coloration that unless we had circumstantial evidence we would hardly have believed that they could have been laid by the same bird. Several nests could be seen from one position but,

they were in very difficult situations, and only one was reached, which was in a tall leaning elm, out some distance in a marsh. Rubber boots were put on, and with climbers, rope and boots dangling over my shoulders I started out. On reaching the tree, boots were changed, climbers fastened on and the ascent made. Though the upright crotch in which the nest was placed was reached in a few moments, it was nearly an hour before the set of two large handsome eggs found their way into my box. The eggs were the largest we had ever collected, and were well along in incubation. It was a noticeable fact that those eggs in sets of two were as a rule larger and farther advanced in incubation than those with three. It is very rarely that four eggs are found in one nest. My friend has only two sets of four eggs to show out of two hundred sets examined of a smaller number from this colony. A tall shaky chestnut stub towered several feet above the surrounding woods and attracted our attention from the very fact that it contained a nest, around which we saw the birds hovering when we were a quarter of a mile away. This was a treacherous old tree, but after some expert climbing the nest was reached by our friend, but found to hold but one egg, which was heavily blotched and splashed with dark brown, completely concealing the impure white ground color around the crown. As we were leaving this nest the Ospreys were seen carrying materials to the nest in the elm, repairing the damage done there necessary to obtain a foot hold. We then directed our steps to a large swamp surrounded by hills and hardwood groves which were fairly alive with our earlier Warblers. As we appeared from under cover of the woods an Osprey, sitting on a large nest in a buttonwood tree on the opposite edge of the swamp, discovered us, and rose flapping its wings and whistling loudly, accompanied by its mate, who was equally concerned. This nest was about forty-five feet from the ground, and placed on top of the partially dead trunk. It contained but one large egg on May 12, 1884. Hunting over the same ground in '85, we ascended to the nest and found it held one large egg of abnormal proportions on May 8th. We were surprised to find two eggs as the complement this season. These were of the same shade of color as those taken in our previous visits and we have found that they do not differ materially in the same individuals from year to year. Some sympathizing companions joined in with this pair and made considerable disturbance, but none ventured to attack us. We found that several nests that we procured sets from in our former trips had been prostrated by the winter storms. Crossing a small stream we walked some

distance down the opposite side along the brow of a hill and came to a large wild cherry tree situated between the hill and swamp, where carefully but firmly balanced on the topmost branches was a well made nest. This was a very difficult place to get the eggs from, for they were fully three feet from the edge of the nest, which was overhanging and very large, but finally we succeeded in getting the set of three eggs into a stocking and brought them safely down. The same old rail was propped up under the nest, that aided us in our previous climbs, and was the means of our getting to the nest this season. A short distance away there was another nest placed in a very large elm several feet in diameter, and without a limb for thirty feet. Our long coil of rope now came in play and it did not take long to rig a boatswain's sling, in which we hauled our friend to the first limb, thence to another several feet higher, where he fastened himself to a large limb above, leaving slack rope enough to reach the nest, which was out several feet from the trunk on a horizontal limb at a great height from the ground. This was reached, and after tearing away a large mass of sticks hanging loosely from the nest, he was enabled to get over into it and pack the three eggs which it contained. He was let down slowly from his high perch, and after taking our lunch and a refreshing rest near a spring, we continued our walk along through pine groves for some distance, until we reached open fields once more, which were skirted until a large chestnut tree was reached. An attempt was made in '85 to ascend to the nest, placed seventy feet from the ground, but proved useless. Having a coil of rope with us now, we are supplied with the necessary means of reaching it. It was the most difficult one we had yet attempted, but rigging a boatswain's sling our friend seated himself in it, and was hauled up to the limit of the rope. Then resting a few moments he cast the rope over a large limb twenty feet higher and fastened it. Then by the aid of rope and scientific shinning he mounted to the nest and worked himself over into it. This occupied nearly an hour, but the climber generally feels amply repaid to find a handsome set of three eggs, even if it takes two hours to reach a nest. Packing the three eggs he let them down by aid of a stout cord and then descended slowly by aid of the rope to the ground. Clouds were forming, and the wind increasing, and it looked decidedly like rain. Repacking our eggs, we made notes, and left for a distant part of the colony, where we knew of several accessible nests, but before we reached the main road it commenced to rain heavily, and our "waterproof" hunting coats were soon soaked

through. There was nothing for us to do then but to tramp home, for it was not safe to climb wet trees, and it would not do to get any farther south if we wanted to get home that night. We know of one nest placed on the top of a large dead pine in dry woods a mile or more from water that we could visit by making a slight detour.

After walking several miles we entered the woods and soon saw it through an opening. The bird arose from the nest as we drew near, and whistled loudly overhead, accompanied by its mate, which had been perched near the nest pruning its feathers. Ascending to the structure on the opposite side to that taken last year, we found it was reached much easier, but it was a rotten old hulk of a tree, and trembled considerably when ascended. We found it held a set of three,—same number as last year, but differing greatly in size and coloration. Those laid in '85 were longer and not so heavily blotched, being evenly distributed over the surface, and of a lighter shade of brown, while the three taken this year were very round and heavily splashed on the crown with very dark chocolate, and on one of the eggs the markings are confined to the larger end, the remaining portion being dirty white, resembling many Red-shouldered Hawk's eggs that I have seen. These packed we prepared for a five hours' hard tramp, for we were yet sixteen miles from our friend's house. Just about dusk we met a friend with a horse and wagon who was going our way and who very kindly carried us to the house, which was reached shortly after 8 p. m., soaked and chilled through, but after a change of clothes we sat down to a hot supper. Then it was pleasant to talk over the day's work, laugh and joke at some of the experiences we had had, and think that we had added another pleasant trip to the list, with still another to look forward to. Let not the reader suppose that the sets above recorded were all that we secured, but being typical "climbs," it would be a needless waste of space to enumerate our other experiences.

Large Sets of Eggs.

Mr. F. L. Farley, of St. Thomas, Ontario, reports finding, in 1885, twenty-one eggs of the Great Crested Flycatcher (*Myiarchus crinitus*), in a single nest, in a hole in an apple tree. The eggs were of five different sizes and he thinks that several females must have deposited them.

A somewhat similar case was the finding of seven eggs of the Chipping Sparrow (*Spizella domestica*), in one nest last summer. It is very unlikely that one female laid them all.—*J. P. N.*

THE ORNITHOLOGIST —AND— OÖLOGIST.

A MONTHLY MAGAZINE OF

NATURAL HISTORY,

ESPECIALLY DEVOTED TO THE STUDY OF

BIRDS,

THEIR NESTS AND EGGS.

DESIGNED AS A MEANS FOR THE INTERCHANGE OF NOTES
AND OBSERVATIONS ON BIRD AND INSECT LIFE.

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Editorial.

The relation of birds to agriculture is a subject which interests a large class of people and is of more than ordinary importance. Even from the primitive days of American ornithology, all students of bird-life, who carefully studied the matter, were unanimous with a verdict in favor of our feathered friends. With the exception of a few species, our birds were considered as beneficial to farmers, and even the species which were formerly under the shadow of suspicion are now recognized as at least neutral, if not beneficial. Our Congress has recognized this subject as of national interest, and forthwith investigations are to be carried on to determine what species are harmful and those that may be beneficial to agriculture and horticulture. With all due acknowledgement of the value of the "investigations" it seems to us almost a waste of life. Investigation in bird-life means more or less shooting, and a collection of stomachs, which is requested can be obtained but by only one method—*kill*.

We ask that a result of these investiga-

tions be arrived at as speedily as possible and the decision made known; yet we doubt if any ultimatum given at Washington will avail much with the average agriculturist, who if possessed of a gun does not hesitate long what course to pursue, when he sees some choice fruit or grain assailed by a bevy of hungry birds. The conclusion of these investigations can be reached only by the slaughter of many species in all localities, and we venture to prophesy that the result will be, what any observing mind can at present see, that the birds are the farmer's greatest friends, not even excepting that much persecuted family, *Raptores*.

English vs. American Taxidermists.

BY WILLIAM T. HORNADAY.

Mr. Montague Brown's remarks on American taxidermy are so characteristically English they ought not excite the least surprise on this side of the water, and it is really a pity to advertise an obscure man and a very common place manual by noticing them. We have so long been accustomed to hearing everything American systematically decried and sneered at by the English, we naturally expect them to take the same view of our taxidermy.

In giving an opinion of American taxidermy, based on bird skins and magazine illustrations, Mr. Brown shows that he is writing on a subject he knows nothing at all about,—an eminently English way of treating American topics. It is merely his misfortune and not our fault that he has not been over here and seen some of our best productions.

Until the English can form a perfectly harmonious and eminently successful national Society of Taxidermists with over one hundred active members, can hold three competitive exhibitions and publish three annual reports such as ours,—the like of all which has never been done in any other country, and probably never will be,—we can afford to let jealous foreigners say of us whatever they choose. Until they can surpass our best work, or produce work of their own which we cannot surpass, they are welcome to rank us wherever they please. Soon after the first exhibition of the Society of American Taxidermists, I addressed letters and printed documents to the leading taxidermists of England, inviting them to join us in an international exhibition. Not one

of my letters was replied to. For several years it has been the dearest wish of many American taxidermists whom I know, to have an opportunity to meet all their foreign rivals, especially the French, German and English, in a competitive exhibition. When that opportunity comes, as come it must sometime, the world shall see who are the "worst," and who have adopted the "crudest English methods."

The reference to the *Century* illustrations impels me to relate a fact bearing upon them. When the illustrative material for that very miscreant article, "The Taxidermal (sic) Art," was being collected, at the request of the editor, the artist wrote to several well-known taxidermists of London, requesting photographs of some of their best work to use in illustrating the article. Some photographs were promptly forwarded, but alas, for human expectations! Mr. Beard informed me that "the work they represented was all so poor that the editor of the *Century* concluded not to use any of them." This is very sad.

True enough; the time was when it was necessary to confess the great superiority of European over American taxidermists. But that was years ago, when Prof. Ward's establishment was founded. At that time "clever foreign artists" were imported, but none of them came from England. The education of American taxidermists by foreigners is entirely a thing of the past. Even at Prof. Ward's there is not at present *even one* foreign taxidermist, nor has there been for about a year; although in the beginning the men from France and Germany reigned supreme. Like the English before us, we have learned our first principles from French and German sources; but we have been able to improve upon them, and go beyond them, in a way our plodding English cousins never have and never will.

PRACTICAL TAXIDERMISTRY.

CHAPTER XIV.—MOUNTING DAMAGED SPECIMENS.

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The following method of mounting rare specimens when badly shot on one side may be of some value to some of the readers of the ORNITHOLOGIST AND OÖLOGIST.

Suppose you have a bird badly torn on the right side. Take the skin in the ordinary way. Then spread your skin out before you with the inside uppermost. Then take your scalpel and cut along the middle of the skin thus from A to B,



it will dry rapidly.

When the plaster has gotten hard take a knife and run it in between the plaster and the bird, all the way around, then take the body out; but be careful not to break the plaster. Now take your plaster impression and grease it well in every little cranny. Take some more plaster and water and mix and pour into the impression until full, then let it set until perfectly hard, then take out carefully. Now take up your skin and put just a trifle of cotton in the neck. Now get a nice piece of board and place your plaster half body on it, in the position you wish it. Paste it on tightly. Then take your half skin and fit it on; you will find that the feathers will lie just as they do in nature, for the cast is exactly the same shape as the body; now paste the edge of the skin all around and put the head and neck in position with pins; covering the heads with feathers. Now put the feet and wings in position and paste them there. The decorations on the panel can be put on a ledge running along the bottom of the panel, for the ground.—*James Speed, Jr.*

Hawking in June.

BY F. H. C.

The tramps we take in quest of the eggs of *Buteo* are generally associated with the memory of the leafless woods and fickle temperature of our New England April. But the keen eye of the observing collector will detect many nests, which show by their construction that the architecture is "hawkish" in model, yet the positive knowledge that they are new to our experience, coupled with their weather-beaten appearance, leaves as a safe conclusion in our debating mind, that they

are nests built during the intermin of our visit the previous spring and the present, and often when pursuing Bob-white with gun and setter in autumn I observed so many nests of the Red-shouldered Hawk's erection, in very familiar woods, which had been well searched in the spring, that it was extremely provoking to think how they had escaped me, for I had diligently sought the second sets about the middle of May, but save for a single instance, I was unrequited for my labor.

My appraisal of the true condition of affairs regarding their late or second laying came upon me unexpectedly and solved the hitherto unsatisfactory problem. While hunting for nests of the Scarlet Tanager about the middle of June in '78, the scream of a Red-shouldered Hawk caused my mind to revert to the vexed question, and I began a careful search for the nest, which was found after several ascents to deserted and empty domiciles. This nest, differing in no way from those found in early spring, contained three eggs, the contents of which the blow-pipe proved to be nearly fresh. Thinking that perhaps this instance was typical of their second laying, I looked for their nests on the following day, and was successful to a moderate degree, finding three nests of the Red-shouldered Hawk, each containing three fresh eggs, and one of the Red-tailed Hawk with young just hatched. Since this, my first experience in their late breeding, I have annually taken an occasional hawking trip the second week in June with good success.

One interesting feature, is the length of time which intervenes between the dates of the two periods of incubation, for having taken a set from a pair of *B. lineatus* as early as April 15, I am obliged to wait until June 8th ere I could take the completed second set. *B. borealis* breeding earlier in April is correspondingly earlier with second sets, having them ready by May 13th, although I have found fresh sets as late as May 26. It seems as though the *Buteos* learn a lesson from the predatory excursions of oölogists in early spring, and they wait until the foliage of the forest has developed sufficiently to screen the nests from view, and their patient waiting is in many cases rewarded, for I doubt if one-third of the nests can be found when hidden in the leafy woods of June; and the number of hawks observed show that they still hold their own against the combined warfare of oölogists, farmers and legislative enactment.

Hawking in June differs somewhat from the same pastime in April. To ascend the forty-foot smooth trunk of a chestnut tree on a summer

midday will remind one forcibly of a modern sweat bath—with the bath left out—while mosquitoes, evidently aware that both hands are fully occupied in grasping the tree, will present their bills with audacity beyond description, and as a culminating crisis in many cases the nest will be found empty or squirrel-occupied, while the nest, to which the pair of hawks screaming overhead belong, can be seen in an equally difficult tree a few rods distant, but which, owing to the density of the foliage, could not be seen from the ground; yet, nevertheless, as a change from the usual collecting of the month, and as much is still to be learned about their second breeding, it would be well for oölogists to go "Hawking in June."

A Two Days' Collecting Trip on the Jersey Coast.

BY HARRY G. PARKER, CHESTER, PENN.

On the lower coast of New Jersey, four miles from the main land, is an island which is so rich in wooded hills, plains, swamp and marshy meadow, that hundreds of birds pause in their migrations, and tempted by the suitable sites for housekeeping, linger and take up their residence there. This island is some two leagues in length, about one mile in width at its upper end and tapers until at the southern end it is but three hundred yards across. Looking from the ocean side we see the wonderful sandhills, which have been centuries in forming, and which tower to the majestic height of a hundred feet in many places. These hills are clothed with a stunted growth of pine, and when seen from a distance present all the variety shown by a European ruin, which they much resemble. Just behind the bluffs is a swamp, extending for about two miles, in which grow the largest of pine trees; and in its midst is an island, solid and firm, but it is only reached by wading through foul and stagnant water waist deep. Once landed here we see how prodigal Nature has been in bestowing upon this limited tract all the wealth of verdure of a semi-tropical wilderness. Immense wild grape vines cast out their arms from tree to tree, the beautiful *usnea* and other mosses cover the trees and vines, and looking at this place from the top of the adjacent sandhill, the western afternoon sun shining through the treetops, and giving life and beauty to everything within, we see such a sight as once witnessed is not soon to be forgotten. After leaving this island swamp behind, and going further west there is a stretch of salt marshy meadow, extending for over a mile toward the Sound. These meadows are soft and treacherous,

and are irrigated by natural sluices and canals, which though not looking deep are really impassable; and one may have to travel a mile to the source of such channel in order to reach a coveted nest almost within grasp—but just across the water. Returning to the ocean side and between the sandhills and the ocean are numbers of dead cedars—the hollowed trunks alone standing and offering the chosen nesting sites of the White-bellied Swallow, (*Tachycineta bicolor*). This island is occupied by but two families. In a house near lower end (known as the Government House) is a Life-saving Station, in which this modern Selkirk and his wife live the year round; and three and a half miles further up is an old-fashioned farm house, with well appointed out-buildings, in which reside the family who has charge of the place—for the island is owned by a Philadelphia millionaire, who refuses any price for it, and whose interests are looked after by the family in question.

To this spot a friend and myself repaired in the latter part of May of the present year, hiring a man and boat on the mainland. A sail of an hour against tide and wind landed us at the southern end of the island. From out the dead cedars above alluded to we take a few sets of the White-bellied Swallow. The birds are very plentiful and so are the nests, no doubt, but it requires time and a sharp hatchet to reach the eggs. The natural weather-beaten holes in the trees afford them an entrance to a spot within, on which is deposited hay and feathers. The general makeup of the nest reminds one much of the home of our common Bluebird, (*Sialia sialis*). A full set is five eggs, as this is the number we invariably found, and the correct time for fresh sets is May 25th to 30th. But although these Swallows are of much interest, and their antics in playing with a feather while their homes are being despoiled, are very curious, still larger game is in sight, and within a stretch of half a mile up the beach can be seen a dozen huge nests of the Fish Hawk, (*Pandion haliaetus carolinensis*).

These nests are invariably placed upon dead cedars and pines, and the surest indication that man has not disturbed them is that they build in such accessible places that a child could climb to nine nests out of ten. In fact I removed a fine set of two eggs from a nest without taking my feet from the ground. So much has been written about these noble birds, and their habits and manners are so well known, that it would be superfluous here to enlarge upon them. There were certainly a hundred nests in this place, and the majority of them were tenanted. The birds

in no case molested my companion or myself, though they flew about quite near, emitting their angry cry. We took a sufficient number of sets to show all the variation the eggs are subject to, both in size and shape, but probably did not visit more than one-fifth of the nests which we saw. Within a space of thirty yards we took four full sets of three eggs, and along a foot path traveled by the Life Guards there were sixteen nests within a half mile, every one of which contained eggs. Some of these hawks have evidently had experience elsewhere, for they build very safely. For instance, one pair built their enormous nest of fagots on top of the stump of a tree about twelve feet high, but as the nest projected far out on every side it was impossible to see its interior without the aid of a ladder, of which there was none at hand. Another pair had their abode in the top of a pine, without branches except at the top, where it grew out parasol-shape in living green, and in the midst of this was cunningly hidden a nest, if such a word can be properly applied to such an immense mass. I took pains to examine this nest critically. It was four and a half feet high, three feet across the top, and had evidently been occupied for many seasons. The inside, or rather top, (for the nests are not hollowed out much) was a deposit of cow and sheep dung, dead fish, and one king crab. In this rubbish were three eggs well imbedded in the wet dung, and consequently much discolored. Some of the fagots forming this nest were five feet in length and as large as a man's wrist. Beneath the tree was a pile of sticks which had either been dropped or discarded. The average height from the ground of about forty nests was twenty-five feet, in no case more than fifty feet, and in many cases not more than twelve. While speaking of Ospreys it may be interesting to note that on the Jersey coast and inland for a mile or two, the farmers erect a pole with a platform on top for the accommodation of these birds. This is planted in the midst of a corn or wheat field, and the theory is that where a Fish Hawk has its nest no Crow or Grackle is to be found. The fine for robbing a nest is \$50, and the "Scientific clause" has been eliminated from the game laws of the State—I venture to say that few nests on the main land are ever molested.

In the living pines which abound on the island at almost all parts the Fish Crow, (*Corvus ossifragus*), breeds. These birds are also legion here, and their eggs are beautiful—much like the Common Crow, (*Corvus frugivorus*), except as regards size, they being much smaller. The nests of this crow are easily reached, as the birds have not learned of man's treachery, and are comparatively

fearless. Fresh sets can be taken from May 15th to 25th, though the 20th is about the right time. It is curious but true, that the crows which breed on the mainland are all the Common Crow, (*Corvus frugivorus*), while the Fish Crow, (*C. ossifragus*), have the island to themselves. In the salt meadows are hundreds of Clapper Rails, (*Rallus longirostris crepitans*), but at the time of our visit their nests contained only from three to five eggs. I know of nothing in bird life more hideous or ungainly than a rail freshly startled from her nest. She reminds me of a muddy ball as she silently rises but a few feet and sails away just over the top of the meadow grass.

Here also we saw the Sea-side Finch, (*Ammodromus maritimus*), and Sharp-tailed Finch, (*A. caudacutus*), but were too early for their eggs. About June 15th is the proper time in that latitude for both Rails and Finches. I have in my cabinet a series of sets of both these finches taken on these same meadows. In 1885 my companion took a perfectly identified nest of Henslow's Sparrow, (*Coturniculus henslowi*), and four fresh eggs on the 27th, but we did not see any of the birds on this trip. Returning to our swamp we saw numbers of Warblers, notably the Blue Yellow-backed, (*Parula americana*) Redstart, (*Setophaga ruticilla*), Prairie, (*Dendroica discolor*), and Golden-winged Warbler, (*Helminthophaga chrysoptera*). One specimen of the Pileated Woodpecker, (*Hylotomus pileatus*), almost transfixed us as we gazed upon him in life for the first time.

A herony occupies a small tract on the Sound side, and in the midst of the most inaccessible portion of the swamp. The huge pines here throw out their branches, and so closely do the trees grow that a person can travel from one to the other by these limbs without touching land, or rather water. The Great Blue Herons, (*Ardea herodias*), are exclusive, inasmuch as they have appropriated a choice piece of swamp land to themselves. Coming upon them on the first evening of our visit, just at dusk we started a dozen or more of the large birds from their platform nests, and they arose in their clumsy manner with many hoarse cries. The Snowy Heron, (*Garzetta candidissima*), and Black-crowned Night Herons, (*Nycticorax nycticorax*), also breed just below the Great Blue quarters, but we did not observe any little Green Herons, (*Butorides virescens*), although they breed plentifully on the mainland. The inhabitants of that portion of New Jersey nearest this island call these herons Cranes and Boobies, and they assert that yearly they rob the nests of fresh eggs, which are highly prized as an article of diet.

Besides these we noticed many of our commoner species. In a shed, built evidently to house a life boat or truck, and open at both ends, a colony of Barn Swallows, (*Hirundo erythrogastra*), had taken up their abode, and we counted nearly fifty nests within a small enclosure just about large enough to successfully keep a load of hay from getting wet. These nests contained from three to six eggs each, and were placed in every conceivable position from the rafters at top of the structure to cross-beams within easy reach from ground. Numbers of Laughing Gulls, (*Larus atricilla*), Black Skimmers, (*Rhyncops nigra*), Wilson's Plover, (*Ochthodromus wilsonius*), Piping Plover, (*Egialites melodus*), Least Tern, (*Sterna antillarum*), Common Tern, (*S. fluviatilis*), Gull-billed Tern, (*S. anglica*), breed here but he who would take their eggs must come about June 15th in this latitude.

Having visited many of the finest collecting grounds within a radius of seventy-five miles from Philadelphia, I can assert that no such place for diversity of bird life can anywhere be found, as exists on this almost untenanted island within seventy-five miles of Pennsylvania's most populous city.

Breeding of the Florida Barred Owl in Texas.

BY J. A. SINGLEY, GIDDINGS, TEXAS.

Having found this owl breeding here (*Strix nebulosa alleni*), I desire to place upon record its occurrence in this State (Texas). It is our commonest owl, and unlike the Great Horned Owl, frequents the thick wooded bottoms almost exclusively. An occasional pair are to be found in the uplands. The Middle Yugua Creek bottoms are a favorite resort for this owl, the trees being heavily draped with the Spanish moss, which offers them a cool and shady retreat during the day. Many a time when camping out in those bottoms on the banks of Wimberly Lake, have I been entertained by the music (?) of this species. They have a habit of gathering about a camp as I have often noticed, when, supper over and reclining on our blankets indulging in a pipe, the light from our camp-fire casting sombre shadows among the trees, the long draperies of Spanish moss concealing foliage and branches, and swaying with the breeze. All nature was at rest, and no sound was to be heard except now and then the hoarse cry of a heron or some of the wild waterfowl on the lake, or an occasional bellow of an alligator and howling of the wolves to break the brooding silence. At such times the owls gather in the surrounding trees, and a low croon

ing sounding can be heard—probably the tuning up of the orchestra preparatory to the overture. Suddenly a shrill and prolonged scream will be emitted by one or more of the owls, compared by those who know, to a Comanche war-whoop. Then will succeed from all congregated a series of laughs, *ha-ha-ha, he-he, ho-ho, hough*, ending at the last in a gurgle as if the bird was overcome by its performance. The concert is repeated at intervals during the night.

Their most common hoot is a long dismal *hoo-hoo-hoo-ough*. During the breeding season this hoot is heard at all times of the day and night. It is through their hooting proclivities that I find the nests, (which are invariably in a hollow tree,) by the female on the nest answering the male, who is generally close to the nest during the day.

I found a nest of this owl March 22, 1885, with two young. This season I thought I would be a little earlier, and I visited the tree the middle of February, and as I dislike climbing unless I think oölogical fruit is ripe, I contented myself with hammering against the tree with my climbers, but no owl flew out. I visited the tree at intervals, but did not climb until March 10th, when I noticed a down feather on the edge of the hollow. I strapped on my climbers and went up. When near the cavity the owl flew out. I looked in and found—a young owlet about twenty-four hours old, and another egg nearly ready to hatch. Now why did not this owl fly off the nest when I wanted it to? In all other nests I have found the occupants were easily scared off. The young in down are of pearly white color—feet, bill and claws pale yellowish. The down stops abruptly at the foot of the toes. At one week old the pinfeathers showed plainly on the wings, and at this age the owlets “peeped” like a very young chicken. When twenty days old the wings are feathered—the young owls being beautifully mottled with white and bright brown. The little fellows showed fight, bracing themselves against the sides of the cavity, and snapping their bills viciously when I tried to handle them. The strip of bristly feathers on the outside of the middle toe now showed plainly.

Owing to sickness and want of time, I did not visit the nest again until the last of April, and I found to my sorrow that my pets were gone—having either been captured by a wildcat or coon, or having left the nest of their own accord.

By the way, is not this owl also credited with laying more eggs than it really does? My record is: Seventeen nests with eggs or young. The number of eggs in each set was invariably two. A set of two now in the collection of J. Parker

Norris, Esq., of Philadelphia, Pa., was taken out of a pinoak tree March 20, 1885. Depth of cavity 18 inches; diameter 16 inches; about 35 feet up. Egg No. 1 measures 1.89x1.58; No. 2, 1.86x1.61. Another set taken March 15th was in a post oak stub, 27 feet up; diameter, about 16 inches; depth, 10 inches. I could partly see the owl from the foot of the tree. This set is now in the collection of Mr. Harry G. Parker, Chester, Pa., and measures 2.01x1.73 and 1.97x1.71. All the eggs, with one exception, are subspherical, pure white, smooth, without granulations. Three other sets (six eggs) taken this season, measure respectively: 1.97x1.78, 1.90x1.61, 1.88x1.67, 1.89x1.60, 1.81x1.54 and 1.87x1.63. Of another set in the collection of Mr. Thomas H. Jackson, West Chester, Pa., I have no data other than that one of the eggs in the set was of an elliptical form. By comparing the average of these ten eggs with the average of the Barred Owl eggs as given by Coues and Davie, it will be seen that they are slightly smaller than eggs of the last named species. In conclusion, the identification of the owl is beyond a doubt. I have taken nine specimens since January, 1886—five of them when flushed from the nest. I sent out several of them to corroborate my naming, sending one to Mr. Wm. Brewster, of Concord, Mass., who wrote me as follows: “The owl is typical *alleni*. I cannot see that it differs in the least from Florida specimens.”

Occurring in Texas and described from Florida, it ought to be found in the intervening states.

The Nest and Eggs of the Acadian Flycatcher.

BY E. J. DURAND, CANANDAIGUA, N. Y.

The Acadian Flycatcher, (*Empidonax acadicus*), was, previous to the spring of 1885, unknown to me. On May 3d, 1885, I noticed a pair of these birds in our orchard, busily gleaming among the branches. On May 28th I found that they commenced to build a nest on a horizontal branch of an apple tree, ten feet from the ground. In about six days it was finished, and the female had laid one egg; but the next day I happened to go under the tree and was very much disappointed to find that a Cowbird in the effort to deposit her egg in the nest had turned out the Flycatcher's and her own, and both eggs lay broken on the ground. Two weeks later, I found a nest of the Acadian Flycatcher in an orchard about four miles from our house, which contained three eggs, slightly incubated, measuring .75x.56, .75x.55, .76x.56. The eggs when found were of a

creamy white color, but soon changed to pure white. The markings vary but little on the different eggs, there being but few fine points of very dark brown scattered about the egg. The first nest found was outwardly composed of strips of the inner bark of some tree, dried grass, rootlets and some threads. The lining of fine dried grass, was neatly arranged. The nest was a very thin loose structure and was fastened to the fork of the branch with cobwebs. The second nest differed from the first by being more compact and by having a large amount of wool entering into its composition; it measured as follows: Diameter, three and one half inches; height, three inches; depth of cavity, one and one-half inches; diameter, two and one-quarter inches. Both nests were placed on a *horizontal* limb, and both were about ten feet from the ground. The birds were very bold. Flying within a few feet of one's head they uttered a sharp, shrill note, and then alight on a neighboring branch. They left for the south in September.

Nesting of the Mississippi Kite.

BY J. P. N.

It affords the present writer great pleasure to be able to describe an authentic instance of the finding of the nest of the Mississippi Kite, (*Ictinia subcærulea*).

On May 8, 1867, the late G. H. Carpenter, (who was an enthusiastic and learned naturalist, and who possessed one of the finest private ornithological and oölogical cabinets in the United States, almost entirely the result of his own labors) found a nest of this species in Carroll County, Louisiana, near the River Boeuf. It was in a large oak tree, about fifteen rods from the edge of a dense swamp of large growth. The nest was composed of coarse sticks and shreds of bark, lined entirely with the hanging moss which grew luxuriantly from the trees in that locality.

The nest contained one egg, which was fresh. The ground color is of a dirty white, marked at one end with three faded brown blotches. The remainder of the surface is covered with smaller and lighter spots, about the size of an old-fashioned silver three cent piece. It measures 1.67x1.33 inches.

One of the parent birds was shot, and on dissection it proved to be the female. Its ovary contained one egg. The egg and parent bird are now in the cabinet of Mr. F. H. Carpenter, who is the fortunate possessor of the magnificent collection made by his lamented uncle, the late G. H. Carpenter.

Nesting of the Spotted Owl.

BY J. P. N.

Little is known concerning the nesting of the Spotted Owl, (*Strix occidentalis*.) and it is therefore a source of pleasure to the writer to be able to record the taking of a set of the eggs of this species.

On May 19th, 1885, E. M. Haight found the nest of this species near Riverside, California. The eggs were laid on the bare ground, at the base of a large rock, and the only attempt at nest-building was the presence of a few feathers which were lying around. There were two eggs, of which the incubation was slight. They are of the usual dull whitish color for eggs of the owl family, and their appearance can be best described by likening them to those of the common Barred Owl, (*Strix nebulosa*.) but they are a little longer. One of them measures 2.11x1.67, and the other 2.12x1.68 inches.

Mr. Haight saw the parent bird very closely, and is positive there can be no mistake as to the identity of the eggs. In addition to being a careful collector of many years' experience, he is well acquainted with all the other species of owls found in the neighborhood of Riverside; and he is sure it was none of them. That town is about one hundred and twenty-five miles north of the Mexican border.

The eggs are in the cabinet of a gentleman in Philadelphia, whose address will be furnished to any one applying for it to the editor of this magazine.

An Albino Tree Swallow.

On Sunday, August 1st, I was passing along the road between Lacon and "Undercliff" and about a mile south of the cliff I saw an albino Tree Swallow. It was with a large flock of the kind and they were along a telegraph wire. As to the identity of the bird there can be no doubt, because I had a splendid opportunity to examine it, the bird being very tame, and I having a pair of opera glasses with me. The bird was a pure white one and presented a lovely sight balanced on its outstretched wings in the full sunlight. The entire party of picnickers watched it for ten or fifteen minutes. Not being a skin collector myself I made no attempt to shoot it, but being fully aware of what a prize is extant, take this method of warning southern collectors to be on the lookout, for should they be fortunate enough to capture it, they would have one of the most beautiful birds I have ever seen. Should any one secure it I should be pleased to have him inform all bird lovers through these columns.—R. M. Barnes, Lacon, Ill.

ENTOMOLOGY.

WRIGHT & BATES,

265 No. Beacon St., Brighton, Mass.,

ASSOCIATE EDITORS.

Address all communications for this department as above.

Owing to a combination of circumstances we have been unable to see proofs of the last three numbers. In consequence some errors have crept in that are alike annoying to our correspondents and ourselves. Hereafter we will see the proofs before going to press and will endeavor to see that there is no further cause for complaint.

An Ant Battle.

BY L. E. HOOD.

Ants are remarkable insects and are very intelligent, some being fine masons, constructing wonderful homes full of arches, galleries and chambers; others are architects and gnaw palaces in tree trunks, that are grand evidences of their industry and perseverance; others, like the Agricultural Ant of Texas, plant and harvest grain for future use.

Some with less pretensions live under stones, bark of trees and in any place that will furnish them protection; but whether you look to the small species that plague the housewife by crawling into the sugar, butter and preserves, or the great ants of the tropics, that construct hills eight feet high, you will find plenty of interesting study.

In their houses, or cities as they may well be termed, they live in peace, though thousands are living under one roof, working, gathering food, and caring for the young, with but one thought, the general welfare of the whole.

In their daily life they show much patience and love for one another, and often do things that are so intelligent that it would almost seem more than instinct.

Living, as they do, in colonies of vast numbers, they consume a large amount of food and are obliged to keep foragers out all the time, who seem to be content with their hard life, are very industrious, often carrying burdens many times their own size and weight, and not only will they do their own share of toil, but will hasten to help a brother when he has more than he can carry.

It is a curious sight to watch them at their work, and I have often placed flies and other insects in their path and noticed many remarkable traits of character.

Once as I was walking in the fields I heard a rustling in the grass, looking down I saw two brown ants trying to drag a disabled grasshopper toward a large ant hill not far away, but do their best it was impossible for them to gain an inch, the ants would rush up and catching the grasshopper by the wing or leg draw back, but a half jump of the 'hopper would compel them to seek safety in flight. They would return again to the charge but all in vain.

Finding they were not able to drag their prey away, one ran off to the hill, while the other stayed to continue the fight.

In a few moments I saw a brown ant rush up followed by a score of others, and by their united strength soon had the grasshopper under control and I saw the last of him as he was drawn through one of the openings of their nest.

When one finds a treasure he communicates it to the others and soon many will be seen around it; place a spoonful of granulated sugar near an ant's nest and before long one will find it; grasping a grain it will carry it into the nest, and on its return others will follow until it is fairly covered with moving forms, and in a short time they will have it carried away.

That they have some way of expressing thoughts to one another is a well-known fact, but how it is done is more of a mystery; perhaps it is done by certain touches of the antennæ, as it is common to see them use this organ in meeting one another, at times by simply touching antennæ to antennæ. At others they stroke the head, thorax or body. Just what these different movements signify it is hard to learn, but often when one finds a treasure too big to carry alone it rushes back to the ant hill, and running about touches several ants and soon a number of them will be seen going in the direction of the coveted prize.

They are very affectionate to their young. Disturb a nest and you will find them carrying off their larvæ and pupæ to places of safety without a seeming thought of their own danger.

Then they have wars, and fight in a most savage way. At times countless thousands engage in the strife, and it is said by those who have seen them, that they go forth in companies, with scouts, officers and foragers, like a regular army. These wars are for various objects, mostly for slaves; but sometimes to punish injuries, real or supposed.

I have never seen but one battle between ants, and this one was more of a mob, for it lacked all order or system, and as far as I could see had no officers or scouts, but the attacking party merely

rushed upon the hill of their foes and fought without orders whenever they were met by the enemy.

It was caused by a small party of ants on a shrub where they were "milking" some of their cow aphids, and before the real battle I saw an invading ant expelled twice from the shrub. Angered by injuries received, it hobbled home to an ant hill not far away, and soon hosts of its fellows rushed forth and fell upon their foes and for a time the fighting was fierce.

Heads, legs and antennæ began to be strewn over the ground, and it is hard to say which would have won had not a severe hail storm disturbed them and put out of my head all thoughts of collecting for the day.

A subsequent visit to the field did not add any light on the battle, for all traces of the fight were gone, and the two tribes of ants were calmly pursuing their usual work.

[While collecting in Newton, Mass., in 1884, I saw a battlefield strewn with dead and dying ants, many of them badly mutilated, but was too late to see the engagement. The blacks seemed to have had decidedly the worst of the fight. Legs, antennæ and heads were scattered around promiscuously, and occasionally a black and a brown would be fastened together as they had died fighting. I have never had the pleasure of witnessing an actual battle.—ED.]

Salve Bugs.

I have just received through the kindness of Capt. E. Cantillon, of Gloucester, some specimens of what the sailors call "salve bugs," owing to the fact that almost the entire substance inside of the skin or shell, is like wax or salve, and can be worked or molded in the same manner. When dry this substance is very hard, semi-transparent, and resembles common red resin.

The "bug" itself is shaped very much like the ordinary sour bug, usually found under sticks and stones, with the exception that it has a small tail or fin composed of overlapping pieces for swimming. There are twelve segments or rings between the head and tail, all overlapping each other posteriorly, each of the first seven being about three times as wide as any of the others, and each supporting a pair of legs, armed with a long, sharp terminal claw, the three anterior pairs much more hooked than the others. The mouth is formed for sucking and projects slightly downward from the center of the underside of the head. The whole upper surface is hard, smooth and polished and the colors range from white to dark brown.

They are parasites of the codfish and are usual-

ly found attached to the fins or tail. Their flat under surface, sharp claws and the position of the mouth all go to show how well they are adapted to retain their position and secure food during the rapid motion of the fish. The specimens referred to were taken over three hundred and fifty feet below the surface of the ocean, on the Georges banks. Length, 1 to 1½ inches.—J. A. Wright.

ERRATA.

Page 93, second column, fifth line, for forward read *formed*.

Same column, seventh line from bottom, for Amyutor read *Amyntor*.

Page 126, second column, twenty-sixth line from top, for Cicindelidæ read *Cicindela*.

Same column, twelfth line from bottom, for punctutata read *punctulata*.

Same column, eleventh line from bottom, for darsalis read *dorsalis*.

CORRESPONDENCE.

"Botany of Birds' Nests."

EDITOR ORNITHOLOGIST AND OÖLOGIST—SIR: Last night two little boys who have resided in South America, and are much interested in birds, brought a bird's nest to me to identify. I told them it was a Rose-breasted Grosbeak. They then gave me the particulars about the three young, which they saw fly, and the old birds, which made it positive. These birds, as you are aware, are not very common. The nest was on grounds well protected.

It was the nest of this bird that set me to thinking what an interesting matter it would be to study the botany of birds' nests. Those found around Rockville, Conn., were all built alike, of one material, which puzzled me for several years. At last the material proved to be the slender branches of the hemlock, stripped of its leaves. The young left this nest in July. You should make a brief note of this find so far east.—J. M. Wade.

It will soon be time to collect birds for specimens, and taxidermists, both professional and amateur, are getting ready. There are two methods for disinfecting the skins before stuffing them, namely, arsenical soap, and what is known as "Dermal preservative." Let all be advised in time that arsenical soap is the only positively sure method yet discovered. The "Dermal" is a delusion and a snare; "we have used both, and in no case has the latter proved efficacious," says a correspondent.—*Boston Saturday Evening Gazette*.

RECEIVED.—C. S. Brimley, Thos. Miller, G. F. Brenninger, Walter Hozic, Thos. H. Jackson, J. A. Singley, Harry R. Taylor. They will please accept our thanks.

3
Bridle
OCTOBER, 1886.

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No. 10.

Some Ornithological Explorations in the Dead River Region of Maine.

BY F. H. CARPENTER.

(Continued from Page 131.)

28. *Dendroica virens*, (Black-throated Green Warbler). This exquisite warbler, my especial favorite, was, as might be expected in a country abounding in evergreen forests, quite frequently observed. A few individuals were met with in the Boundary chain of mountains, but the greater numbers were seen near the clearings at Eustis and thence to Moose River. The nests were evidently placed in the tops of the hemlocks, as in such places in three different localities, the birds were observed carrying material for its construction.

29. *Dendroica palmarum*, (Palm Warbler). Although this species was one which I had hoped to find breeding in the north mountains, I am obliged to record it within my observations as a migrant, none being seen in summer. A few were seen in June along the Carrabossett River.

30. *Siurus naevius*, (Water Thrush). The only observation recorded of this bird was one taken at the lower cascade on Tim Brook, June 3d. Despite my many advantages for field work in various portions of New England, I must confess that the above instance was the second time I ever saw the bird in life.

31. *Geothlypis trichas*, (Maryland Yellow-throat). This species was observed near Farmington and a collector in that town assured me that he annually secured its eggs. Did not observe it in the mountain region.

32. *Myiodiocetes canadensis*, (Canadian Flycatching Warbler). A fairly common resident, but very local in distribution. From evidence of observance I presume they nested on Black Mountain near Tim Pond. None were seen at the Seven Ponds or vicinity, while at Flagstaff they were frequently observed during my brief stay. I was so fortunate (?) as to find a nest with four

young just hatched; it was placed on the ground at the foot of a small clump of 'moosewood' on Little Bigelow Mountain and constructed entirely of very fine rootlets and twigs.

33. *Setophaga ruticapilla*, (Redstart). Specimens of this bird were secured as far north as Boundary Lake and Tim Pond. These were lone individuals and appeared out of place in the dark gloomy forests. In the southern portions around New Vineyard and Madrid they were frequently seen in pairs along the roadside, as I drove along enroute for the north. I was informed that they bred in the scrub growth on the farms, but did not find any nests, as I devoted my limited time in pursuit of less familiar birds than this gorgeously attired little visitor to my Massachusetts home.

34. *Vireosylva olivacea*, (Red-eyed Vireo). This Vireo was heard singing in the orchards around Farmington and Kingfield. No further notice was given this species save to keep a sharp lookout for its occurrence in the mountains and forests of the Bigelow chain, but I did not detect it north of Kingfield.

35. *Vireosylva gilvus*, (Warbling Vireo). This is another species which I include on the excellent authority of my Farmington friend, Mr. Freeborn, who aided me greatly by his notes on the birds peculiar to the south portions of the counties, as my stay in that section was very brief, spending my time in the "up river country."

36. *Lanivireo solitarius*, (Blue-headed Vireo.) The Solitary Vireo was seen in limited numbers along the Carrabossett River, but from some reason was not as frequently seen as I expected or they may not be as abundant in the fauna as others have been recorded. I spent two days at a lumber camp in Jerusalem, and after finding out my business with true Yankee inquisitiveness, one of the men brought me a Vireos nest containing four eggs, and a specimen of *L. solitarius*, which he assured me was the bird "sitting on the nest when I crept up." Evidently his gun was loaded for "b'ar," as the specimen was mutilated beyond all hopes of preservation. The eggs re-

sembled a set of the Yellow-throated Vireo's in size and shape, but were very much spotted for a Vireo's. The nest was that of a Vireo beyond doubt.

37. *Lanius borealis*, (Great Northern Shrike). The Butcher-bird was seen in June and September, but under no circumstances to attest to its nesting. A lumberman told me that he had found nests of the "Crazy Jay" on Mt. Abraham, but on such evidence I could not include it as one of the breeding residents of the counties.

38. *Ampelis cedrorum*, (Cedar Waxwing). One of the most abundant birds of the forests, being found about Seven Ponds in numbers, and were far more common in the wilderness than in the cultivated districts. No nests were found, but they undoubtedly breed, as Mr. Freeborn has many sets, collected in his vicinity. I was absent from the region during their usual period of nesting, which may account for my failure to record their nidification.

39. *Hirundo erythrogastra*, (Barn Swallow). Noticed at Farmington. It is not to be expected that this species would be very abundant in a thinly populated country.

40. *Tachycineta bicolor*, (White-bellied Swallow). A common summer resident. Observed in the forest regions, where many would be seen skimming over the surface of the lakes. They breed about Eustis, in the hollow stumps of the clearings.

41. *Cotile riparia*, (Bank Swallow.) In the side of the gravel cuts on the Sandy River and Franklin and Megantic narrow gauge railroads I noticed many holes made by this bird. The last named railroad was constructed in 1885, and in August, 1886, when riding over it I noticed the sand banks left by excavation of earth for the track, were punctured with the holes of this species. The Bank Swallow is evidently on the increase in this section.

42. *Pyranga rubra*, (Scarlet Tanager). This species is included on the authentic statement of Mr. J. L. Colcord of Augusta, who saw one Sept. 2, 1885, while at his duties as engineer of construction of the F. & M. R. R. It may be considered common to this latitude, but I failed to detect it.

43. *Pinicola enucleator*, (Pine Grosbeak). This bird of erratic movements was observed at Kingfield in January, a small flock remaining for a considerable period. I am confident I saw a female on Boil Mountain in August. Did not observe it at all in June.

44. *Carpodacus purpureus*, (Purple Finch). The Linnett breeds in the southern portions of the counties, and a few were seen in the immediate

vicinity of Dead River, but could not detect them nesting in the forests. Their nidification about New Portland and Kingfield was in no wise different from the well known habits of this species.

45. *Loxia curvirostra americana*, (Red Cross-bill). No nests of this species were found, but in August they were very common about the camps, often coming at our feet in small flocks and feeding on the refuse when preparing trout for the regulation camp fry. By this it would seem that they did not confine themselves to the usual bill of fare which anatomists assign them, from a study of their bill and its mechanical properties. A peculiar note of these birds, which is uttered while in flight, is especially interesting. I can liken it to nothing but the tinkling of several small sweet-toned bells.

46. *Ægiolus linaria*, (Red-poll Linnett). This species was seen only in winter. A few came about the lumber camps in January, and remained for several days.

47. *Astragalinus tristis*, (American Goldfinch). Observed in all portions of the counties, but more common in the cleared tracts than in the forests. They were common at our camps at Tim Pond. I was too early for their usual time of nesting, which occurs in July, as elsewhere in New England.

48. *Chrysomitris pinus*, (Pine Finch). The only recorded observation of this species is a small flock which remained about the camps at Seven Ponds, for nearly a week in September; a long time for such a restless bird.

49. *Poæetes gramineus*, (Grass Finch). Observed in the open fields around houses. Did not look for nests. Mr. Freeborn lists it as "Abundant summer and winter; breeds."

50. *Zonotrichia albicollis*, (White-throated Sparrow). In spring this Sparrow was pretty evenly distributed, but by August they came in flocks around the camps and in the tote roads. A nest found in the clearing at Tim Pond, a few rods from our log cabin, by my companion, contained on June 3d, four eggs. It was placed on, not in the ground, in a bramble of fire weed and blackberry vines, and was exceedingly bulky, being composed of grass and weed stalks, fine rootlets and horse hair, taken from the old lumber stables nearby. The eggs were heavily marked with dark brown on a greyish ground color. Several old nests were found in August. Their clear whistle of a song is well known. "They are rendered further conspicuous by the whistling sound of their wings when in flight."

51. *Spizella montana*, (Tree Sparrow). Seen only in winter, and then in very limited numbers.

The latitude being too far north for that season of the year in our vigorous climate.

52. *Junco hyemalis*, (Snow Bird). A common resident in summer, in the mountains north of Dead River as well as in the Bigelow chain. In the vicinity of the camp at Tim Pond we found several nests, and on Mt. Bigelow they were the commonest birds. The nests were in every instance placed on the ground, and in no case did they contain more than four eggs as a complement. The eggs present in coloration all the variations of the family, with a ground color from white to almost a green, or sometimes totally obscured, and blotched with various shades of brown, often congregating about the larger end, leaving the remainder of the egg almost immaculate, and again profusely and entirely covered with blotches, they present a pleasing variation.

(To be Continued.)

Notes on Some Birds of the Great Smoky Mountains.

BY ARTHUR LEMOYNE, M. D.

(Continued from page 132.)

MEGASCOPS ASIO,
Screech Owl.

This little Owl was the most common of any in my youthful days, but its present status is not very definite. In autumn they are frequently met with, and often are surprised in outbuildings, to which they have retreated in the day time, and coon-hunting parties report finding them in hollow trees, in fact, for many of my specimens I am indebted to the negro hunters. No one county appears to be favored with the presence of this species more than another, and faunal lines have no effect in defining their habitat. To concisely state the occurrence of this bird, it may be considered as not common, and a few breed. I have myself found several nests, all of which were in the old trees by the streams or in orchards. The familiar nest needs no description, and the four white eggs it usually contains, although highly prized by the collector, are too well known to require further statements.

Although the country would seem, to the theorist to be suitable for an abundance of our *Raptores* yet they were the least represented of any family of birds and consequently their biography is unsatisfactory to a large degree.

SYRNIO NEBULOSUM.
Barred Owl.

This species is quite common in October, when their hootings may occasionally be heard. The propensity of this Owl to resort to the same nest

year after year is well known, and the collector who discovers such a place has an annual income. Several years ago a pair took their abode in an old hollow stump some twelve feet high, in an old field about a mile from the base of Bald Mountain, and the past spring I was highly pleased to again take a set of three eggs on March 27th, after an absence of three years. The hollow was about two feet in depth and open at the top, consequently a rain would render it very uncomfortable, except to a certain denomination, for the eggs were 'immersed' several times.

At present the above is the only breeding instance I can record in this region, but as transient visitors the Barred Owl may be met with at all altitudes.

BUBO VIRGINIANUS.
Great Horned Owl.

With no pretense to infallibility I may overlook some prominent species, but I cannot understand why this Owl has not been listed as a resident of this country. Rapacious birds like the Great Horned Owl are likely to make their presence known, which renders the omission the more prominent. I consider this Owl the most common of the *Rapacia* excepting the Turkey Buzzard. Several nests have been found, principally in the evergreen growth of the mountains, where they were placed at dizzy heights, making it such a risk to ascend that in many cases I simply said "sour grapes" and passed on. Fortune, however, favored me with several easy of ascent, and I have secured many *pairs* of eggs during the past score of years. All of the nests were either old Hawks', or built by the birds, none were in hollows or cavities. Like the other Owls, they are the most numerous or conspicuous in the fall and winter. I also observed an individual of this species near Church river in Virginia.

CATHARTES AURA.
Turkey Buzzard.

This bird is seen everywhere in numbers which under certain conditions will increase until their "numerousness" is beyond comprehension if not numbers. This species is supposed to occur anywhere south of Mason's and Dixon's line, but in this locality its nesting is a matter of conjecture save to the birds themselves. I have scaled almost inaccessible cliffs, crawled carefully and tremblingly along narrow shelving rocks and hung by a rope over yawning chasms, and for my reward I have a cracked egg of the Turkey Buzzard. In the single instance where fortune favored me with a squab and addled egg, I had my first and last peep into the home circle of these Buzzards, as I gazed at the rotten log by side of

which the offspring sat. It was not on any romantic cliff or fear inspiring precipice, on the contrary it was in the forest of Monroe county, in no wise different from any of the ordinary undulating mountain sides, and only by accident did I find it, and only by a similar chance do I expect to find another in this locality.

AQUILA CHRYSÆTUS.
Golden Eagle.

Far above the circling Buzzards could now and then be seen the form of one of these noble birds as in evolutions, comensurate with their superior size, they scanned the earth beneath in search of prey. They nested with the buzzards and it is needless to say I did not seek their eggs, but a friend came to spend the season with me and the sight of these birds as they prepared for their early spring nesting enthused him to such a degree that he desired to look up their eyries. With the memory of my previous cliff hunting I declined to accompany him and he started alone. In three days he returned for provisions, and announced his determination to renew the search. While admiring his perseverance I pitied his judgment, but when visiting him a few weeks ago and admiring the splendid pair of these Eagles and set of eggs in his extensive collection I secretly wished that I had possessed more of his New England grit and less of my southern lassitude.

The eyrie from which my friend secured his set of eggs was on Bald Mountain and I extract from his journal, which I secretly purloined for a short time: "Grasping firmly a small stout mountain shrub I crawled as near the edge of the cliff as I dared, when raising my head I could see the eyrie and the two eggs which it contained. First desiring to secure the birds I crept back to where I had plenty of room, and waiting until the male was overhead I fired my Winchester. The ball sped true to mark, as he fell with a broken neck. I fully expected the female to fly from range, but not comprehending the report and seeing her mate fall she swooped down to investigate. Hastily pumping another cartridge into place I fired, but in the excitement of the moment missed. As the bird began to tower into the air I again fired, with fatal result to the eagle. With my camp hatchet I cut a large birch, and leaving some length of limbs on the trunk I let one end over the edge of the cliff. Fortunately it was long enough and I went down the impromptu ladder with some misgivings. The eggs were safely secured and packed and with the birds over my shoulder I started on the eleven mile tramp to the Doctor's camp."

Brief notes of the following will be given, as they will complete my record of Raptores.

FALCO PEREGRINUS ANATUM, Duck Hawk. A few birds of this species seen all summer, but from my experience with Buzzards I do not look for any possibilities of finding nest or eggs. They may be ranked as breeding in these mountains.

FALCO SPARVERIUS, Sparrow Hawk. Another rare bird, and one which may possibly breed, but I never found its nest. Found a nest in the Church River country in Virginia in 1883. It was in an old maple stub standing alone in an open field. The five eggs which it contained were exceedingly handsome, each egg being ringed with chocolate-colored spots.

PANDION HALIÆTUS CAROLINENSIS, Osprey. I have seen this species just often enough to include it amongst the *Raptores* of this country.

ACCIPITER VELOX, Sharp-shinned Hawk. Not common. Have shot two and seen a few others.

(To be Continued.)

Observations on the Development and the Decay of the Pigment Layer on Birds' Eggs.

BY ALEXANDER M. M'ALDOWIE, M. D., VICE-PRESIDENT OF THE NORTH STAFFORDSHIRE NATURALISTS' FIELD CLUB, ENGLAND.

Read Before the North Staffordshire Field Club.

Many and various are the theories which have been brought forward by ornithologists to account for the coloration of birds' eggs, but all have failed to explain why the majority are so richly and beautifully ornamented. White eggs, deposited in dark situations, are accounted for, as also are those which simulate the colour of the soil or other material on which they are laid. All others, comprising by far the largest proportion of eggs, have proved an enigma as yet unsolved. Theorizing on this interesting subject, it occurred to my mind that if we were to reverse the usual order of study, examine first the pigmentation of these eggs whose colours apparently bear no relation to their surroundings, and afterwards investigate the causes which might have brought about the loss of pigment in white eggs, and also the method by which protective mimicry had been produced, we might arrive at a more satisfactory and scientific conclusion. A review of other organic objects gave abundant reason for this order of investigation. White is one of the rarest hues in the organic world. When it occurs it is for some specific purpose, and its presence can always be easily accounted for. Thus, animals which live within the arctic circle are white like the snow of these regions, the perianth of many flowers is white to attract insects and ensure cross

fertilization, and most sea birds are white, with blue on the back, resembling the colours of the clouds, and rendering them less likely to frighten the fish upon which they prey.

Much has been written about the variety of colours observed on eggs, but a glance at the solar spectrum will at once show the fallacy of this opinion. The only portions of the spectrum represented on the whole range of colours of birds' eggs are a small band on the red (forty to forty-five), and another on the green (eighty-five to ninety-two).

This seems the more striking when we consider the number of colours exhibited by the birds themselves, where every part of the spectrum is represented, as well as by other organic objects, as insects, flowers, &c. Only two colours of pigment are found on eggs, green and red—together with black, which is not a colour in the scientific sense of the term. It is a remarkable fact, and one which I have never seen noticed by writers on the subject, that all the rich hues and shades with which eggs are so lavishly ornamented, are merely intermediates between these three.

I have arranged the following scale by an expansion of these three according to chromatic rules, and it will be seen that it embraces every shade of colour found in bird's eggs.

BLUE-GREEN.	RUSSET or Orange Brown.
Green.	Brown.
Olive-Green.	Grey-Brown.
Olive.	Brown-Grey.
Olive-Brown.	Black or Grey.

The hæmatin of the red blood-corpuscles is the source of these pigments. It is taken up by the pigment cells where it undergoes metamorphosis into the green, brown and black shades, and is then secreted by the particular follicles at the lower part of the uterus. "To understand how yellow, green, brown and black pigments may be derived from the colouring matter of the blood," writes Rindfleisch, "we must first glance at the physiological metamorphoses to which this substance is liable. The most important of these, and in some sense typical of all the rest, is its transformation into bile-pigment. The red corpuscles, as they grow old, part with their colouring matter to the serum; from this it is taken up by the liver-cells, which transform it into bile-pigment; as such it is ultimately excreted in the fæces. Before it is thus removed, when retained in the gall bladder for any length of time, it undergoes further changes, passing through shades of yellow, green, brown and black, which Shædeler terms respectively bilifuscin ($C_{32}H_{20}N_2O_8$), biliverdin ($C_{32}H_{20}N_2O_{10}$), biliprasin ($C_{32}H_{22}N_2O_{12}$), and bilihumin; bilifuscin differing from bilirubin in con-

taining two atoms more HO, biliverdin from bilifuscin in containing two atoms more O, biliprasin from biliverdin, again by an access of 2HO, while bilihumin is a black, insoluble, very highly oxidised substance."

"The scale of colours enumerated above serves, as already stated, as a standard for the course of all other chromatases, whether physiological or pathological."

A careful study of these pigments will show the reason for this limited range of colour. If we examine the characteristics of the pigment layer on eggs, it is impossible to resist the conclusion that its presence has reference to the sun's rays. All organic objects which are liable to be exposed to the sun's rays are protected by pigment of one colour or another. This is the chief use of pigment in the animal world. In many animals the colours are adapted or modified for concealment, but their primary use is for protection from the glare of the sun. The delicate and tender ovum in particular requires protection. Professor Yung has shown the generating power of the sun's rays on the ova of frogs. In 1881, I read a paper showing that the pigment of frog's spawn was placed in the ovum itself to absorb the sun's rays as well as to protect the organism*. But the ovum of the more highly organised warm-blooded animals does not derive the stimulus required for its development from the rays of the sun but from the body of the parent. I think that this affords us sufficient reason for assuming that the use of the pigmented covering of the shell is to protect the sensitive ovum from being acted on by the sun's rays. If we make two perforations in a piece of cardboard, cover one with a piece of pigmented egg shell (*e. g.*, a rook's or blackbird's), and the other with a white one (*e. g.*, a pigeon's or a woodpecker's), and hold the cardboard up to the light, we see the great amount of protection afforded by the pigmented shell. True, the same end might be gained by thickening the shell, but it would have to be increased several fold to afford an equal amount of protection, and nature is never wasteful in material. Moreover, owing to the peculiar way in which the yolk is suspended by the chalazæ, the germinal spot is always uppermost, and consequently exposed to the sun's rays striking from above.

Mr. Salvin noticed in Guatemala that Humming-birds were much more unwilling to leave their nests during very hot weather, when the sun was shining brightly, than during, cool, cloudy, or rainy weather.

I shall afterwards show that there is a direct relation between the amount of light to which the

egg is exposed and the intensity of its pigmentation; that direct exposure to the sun's rays is necessary for pigment to acquire its full development; and that eggs deposited in sites protected from the sun's rays gradually lose their pigment layer.

If we examine these three shades from a purely chromatic standpoint, apart from any physiological views of their development, we shall see how admirably adapted they are for the purposes of protection and concealment.

1. Green is the colour we would naturally expect to find used as a protection for eggs. We know by experience that it has a peculiar softening influence on light. When it is present, it is always as a ground tint, uniformly spread over the surface of the egg. Most eggs are more or less covered with spots, blotches, or streaks, but these markings are never formed of green pigment. Many markings appear green to the eye, but this appearance is produced by the green ground tint being seen through a thin layer of black or brown. The spots in that case are of a darker green than the ground, but never deeper or richer. The most common tint is a bluish-green.

2. Red. If we see a reason for the use of green pigment as a protective layer on eggs, we can find an equally good one why red should be employed as the second or supplementary colour. In the chromatic circle all colours are arranged in pairs, and the colours in every pair are complementary to each other. When two colours are seen in juxtaposition, they mutually effect each other, both in colour and tone. A yellow object, for example, placed close to a blue one, will appear as if inclined to orange, while the blue object will seem to incline towards violet. But two complementary colours, such as red and green, do not modify one another's colours by contiguity. They merely enhance each other's characteristics. Further, Professor Church remarks that green and red have a relation to each other which is different from that of any other pair of colours. "That there is something very peculiar in the relation of green to red," he adds, "may also be concluded from the frequency with which there two colours are confounded by persons who suffer from colour blindness." The exact tint, which seems to be the basis of all the reds and browns found on eggs is a russet or orange-brown, and, if we examine the chromatic circle of Maxwell, this tint will be seen to be the complementary colour of the bluish-green, which I have just remarked is the usual ground tint. Red pigment is usually arranged in the form of spots, streaks, or blotches. Occasionally it is used as a ground tint

—as in the Grouse tribe—but then it is usually more or less speckled. It rarely if ever exhibits the smoothness or evenness of the green.

3. Black seems to be employed mostly as a tone-giving neutral to enhance these two colours. Orange or red seen in juxtaposition with black is rendered rather lighter in tone and more luminous; green with black becomes more brilliant, but the black suffers in purity, and appears slightly tinged with a ruddy hue. The grey markings seen on many eggs, *e. g.*, the Sparrow tribe, are produced by a light layer of black pigment.

Next to their limited range the variation of the colours of eggs in the same species is the most striking characteristic. In the eggs of several species, as Gulls, Terns and Guillemots, the range of colours extends almost from one end of the scale to the other. What a contrast with the colours of the birds themselves, where the colour of a few feathers in some instances constitute the difference between the species, or with lepidoptera where the pigmentation of a few scales determines the name of the insect. And not only do the eggs of birds of the same species differ, but those of the same individual vary almost to the same extent. Thus in a Tern's nest, containing four eggs. I found one of a pale green colour and another of a deep reddish-brown. The other two were of intermediate tints. In this case the green egg had been the first laid and the brown one last.

Basing our theories on the development of pigments referred to above, which is generally accepted by physiologists, we would infer that green was the first colour which was developed in the eggs of the early species of birds. The eggs of the species extant support this conclusion. Green is the most common and most widely distributed colour. Schmidt states: "The more stubbornly a character is transmitted, or, what amounts to the same, the greater the number of families, genera, and species over which a character is extended, the earlier did it appear in the ancestral stock." It is also, as has been shown previously, the colour best adapted for protection from the stimulating influence of the sun's rays, and there can be no doubt but that this is the primary use of pigment. Almost every egg which is laid in a situation where there is no need of concealment, but which is exposed to the sun's rays—*e. g.*, Rooks, Herons—is of a green colour.

Red or russet, and all the intermediate tints, appear to be developed chiefly for concealment, the different shades of brown showing in many instances perfect adaption of the colour of the egg with that of its surroundings. This colour is

chiefly exhibited on eggs which are deposited on or near the ground, as the waders', gallinaceous birds', Larks', &c. Hewitson states: "We should scarcely expect to find the eggs of the Crane so entirely different from those of all the other species which are most nearly allied to it in habit and in form. Whilst the eggs of all these species, with the exception of those of the Spoon-bill, are either pure white or slightly tinted with colour, but always spotless, those of the Crane are, on the contrary, richly coloured." This difference may be completely accounted for by the above theory, as the Crane habitually breeds on the ground, whilst the others choose elevated sites. Compare also the eggs of the three species of divers, laid on the margin of the freshwater lochs in the north, with those of their congeners the Guillemots, deposited on cliffs.

The coloration of the eggs of the Falconidae are in some respects exceptional, depending on the nature of the food and other causes, which lie beyond the scope of the present paper.

When I examined eggs with reference to the amount of light to which they were exposed, I found that the ratio between the intensity of the pigmentation and the degree of exposure was very marked, and, indeed, almost startling. For example, the eggs of birds which breed early—as the Thrush tribe, Hedge Sparrow, &c.—have well-developed ground tints; whilst those of the later breeders—as the Green Finch, Linnet, &c.—laid after the leaves are out, and therefore screened from direct sunlight are more faintly coloured. My own experience is that exposure or shelter from the sun's rays plays an important part in the selection of a sight for nidification, by the parent bird.

It may be laid down as an almost universal law in ornithology, that eggs which are deposited in situations exposed to the sun's rays are much darker in colour than those laid in nests protected from direct sunlight. They almost invariably possess a well-developed ground tint. Some, *e. g.*, the Heron and the Hedge Sparrow, are spotless, but most show markings of some kind.

Eggs laid in shaded nests, *e. g.*, the Yellow-hammer and the Green Finch, possess a faint ground tint, and the markings are usually smaller and lighter than in the preceding.

Eggs laid in covered nests, as the Tits' and Wrens', usually present faint spots in a white ground.

Eggs which are wholly excluded from light, as Woodpeckers' and Kingfishers', are almost invariably pure white.

Not only does direct sunlight seem necessary for the pigment layer to acquire its full develop-

ment, but there is also strong evidence that all white and faintly coloured eggs have undergone or are undergoing a process of decolorization when the protection afforded by the pigment layer is no longer required. This is in accordance with the laws of physiology. If any tissue or organ loses its function it will gradually waste and finally disappear. Moreover it has been shown by evolutionists that the lost organ is apt to appear as a variation, or as a rudimentary and useless appendage; many eggs, therefore, show rudimentary pigmentation, and colour appears sometimes as a variation in eggs which are normally white. Eggs have been divided by Wallace into white and coloured, spotted and unspotted; there is, however, an unbroken series between white eggs and those which are highly pigmented and spotted. Further, the eggs of several species would have to be included at one time under the former category, and at another under the latter. For instance, the egg of the White-tailed Eagle is usually white, but occasionally it presents well-defined markings. The egg of the Puffin is as often colourless as it is pigmented. That of the Whinchat is of a bright blue-green, sometimes spotless, sometimes faintly speckled at the large end with rust colour.

It has been stated that white and light coloured eggs are found in dark and sheltered situations because colour is not necessary to conceal them from observation. The fact has, however, been overlooked, that eggs laid in elevated sites, as Gulls', Rooks', Herons', &c., have well-developed colours, although they can be of no use for concealment. Want of the stimulus of the sun's rays alone causes the colour to fade or disappear.

When one (or one or two) species in a family, where the majority lay deeply pigmented eggs, lays either a white egg or one faintly coloured, we invariably find that it differs from the others in its mode of nidification, depositing its eggs in some place protected from the light, whilst its relations lay in exposed situations. In this case there is what may be termed a specific decolorization, the loss of pigment affecting the individual species alone, and not extending to the other members of the family.

When the whole of a genus or family lay white eggs, we find that either all, or the majority of the species, deposit their eggs in places protected from the light. In this case there appears to have been a generic decolorization affecting the group as a whole, the pigment having become obsolete at a much earlier period than in the preceding case, probably before the differentiation of the family into the existing number of species.

(To be Concluded.)

THE ORNITHOLOGIST —AND— OÖLOGIST.

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ESPECIALLY DEVOTED TO THE STUDY OF

BIRDS,

THEIR NESTS AND EGGS.

DESIGNED AS A MEANS FOR THE INTERCHANGE OF NOTES
AND OBSERVATIONS ON BIRD AND INSECT LIFE.

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Editorial.

We have always permitted our correspondents to freely express their views on any subject—when not too personal—and it is a known fact in journalism that we are not to be considered as responsible or endorsing their statements by publishing them in the proper place. In this issue a gentleman well known in ornithological circles gives from another standpoint his opinion of the "Amateur and A. O. U." We gave our opinions in these columns some time ago, and shall let the matter drop, as no statement was made that we did not corroborate by written testimony, which evidence we shall not hesitate to use in a very pronounced manner if too many charges of falsity are hinted at. We are willing to go "half-way" and commend Mr. Chamberlain's article to the better judgment of our readers.

The New Edition of Dr. Coues' Key.

The second edition of Dr. Coues' "Key" having been exhausted, his publishers, Messrs. Estes & Lauriat, some time ago announced the preparation of a third edi-

tion. An erroneous impression seems to prevail that the work is to be entirely reprinted, and such alterations and changes made in it as would practically render it an entirely new book. This opinion has no doubt been fostered by a paragraph which appeared in *The Auk* for July, 1886, (Vol. III, p. 415,) where it was announced that the new edition would contain "the new nomenclature of the A. O. U. Committee, with all necessary corrections and additions to date." As Dr. Coues is one of the editors of *The Auk* this paragraph was considered as official.

Having written Messrs. Estes & Lauriat, and called their attention to the aforesaid announcement in *The Auk*, they replied stating that it was news to them; that Dr. Coues only contemplated making "some additions and corrections to the *Key*, that is, if we do not decide to bring the book out before he can do the work; but in any event they will be very immaterial, and probably nothing more than some few changes of words or extra descriptive paragraphs."

As the *Key* is stereotyped the changes will in all probability be very slight. The A. O. U. nomenclature will therefore have to be given (if at all) in an appendix, for any other manner of printing it would require the type to be entirely reset, at an enormous expense. For all practical purposes, therefore, the second edition will be as valuable as the third, and we old-fashioned people who have become accustomed to see the nomenclature of the *Key* commence with the Thrushes, will not be astonished to find the ungainly Grebes heading the list.

Eggs of the White-tailed Kite.

A set of five eggs of the White-tailed Kite, (*Elanus glaucus*), have recently been received by Mr. Harry G. Parker, of Chester, Pa., and they are now in his collection. The set is in no wise remarkable except that it establishes the fact that more than four eggs are sometimes laid. These eggs were taken by Mr. Clark P. Streator of

Santa Barbara, California, on April 14th, of the present year. The nest is described as being carelessly made of sticks placed in the highest limbs of a live oak. The following is a description of the eggs, with measurements:

No. 1. 1.73x1.27. This specimen somewhat resembles a typical egg of the Sharp-shinned Hawk, (*Accipiter fuscus*), inasmuch as it exhibits considerable creamy white surface. The entire larger end is completely covered with deep chestnut and small blotches of the same color are dispersed over the entire egg—small flakes appearing on the white ground color.

No. 2. 1.60x1.28. The entire egg is covered with a rich chocolate, and on the smaller end it exhibits a clouding of the same, seeming as if put on in daubs with a brush.

No. 3. 1.67x1.29. This specimen almost exactly resembles some eggs of the European Kestrel—the entire color being a solid chestnut, with here and there a suspicion of small coal black spots.

No. 4. 1.64x1.26. The creamy ground color is apparent on parts of the egg, beneath the clouding and blotching of very deep chestnut.

No. 5. 1.61x1.28. Probably the last egg of the set deposited. The larger end of the egg is devoid of any clouding or blotching, and is a solid brown, in which the black marks noted in No. 3 of this set are quite numerous. The smaller portion of the egg is the same color as the rest of the set—a rich chestnut. Altogether it is a very handsome set, and no two eggs are alike.

Field Notes on Some Birds of Colorado.

BY CHARLES F. MORRISON, FORT LEWIS, COL.

As I promised, I send you a few notes on the birds of this vicinity, and as an introduction I will give a brief description of the country, but first let me say that as I came here rather late, and having to devote a good part of my time to getting my headquarters in shape for a long stay, my trips afield have been limited. I shall not give my notes in any systematic order, but in the order I find them noted. Fort Lewis is situated nearly 9,000 feet above sea level, and is midway between the plains and the high peaks of the Rocky Mountains. As regards altitude, it is built upon a long, level stretch of country, through which runs the La Plata river, a mountain stream fed by the melting snows and springs, it abounds in trout, and this, with a species of "sucker," is the only fish of all these mountain streams. It will be perceived that a country of

this kind must be almost destitute of waders and swimmers. The vegetation is varied, large forests of pine flourish upon the mountain sides and along the river bottoms and bluffs; along the streams the cottonwood is the most conspicuous tree, together with a dwarf willow, and various bushes—the bulberry being very prominent. On the mesas the scrub oak covers the ground as far as the eye can reach, together with small patches of sage brush; the wild rose and numerous prairie flowers grow in abundance. Reptiles are scarce in this light, dry air, there being two species of snake (*coluber*) along the stream bottoms, and the Horned Toad suns itself upon the dry mesas. Our common frog and toad are scarce. I can, as I write, look from my south window and see the mountains of New Mexico and Arizona, and by climbing the mesa to the west, Utah can be seen stretching away in the distance. It may easily be perceived that it is a place that does, or ought to abound in rare species, and where new additions to the avi-fauna of Colorado may be looked for. My rarest find so far is the Pigmy Owl, (*G. gnoma*?) breeding, which shall be the subject of an article at no late date. As to the mammals; bear, mountain lion, lynx, and deer are abundant, and also the mountain sheep, which are protected by law until 1895. Rats are conspicuous by their total absence. The familiar chipmunk is plentiful and grows larger than in the east. A few species of gophers complete the list. To save time and space I omit numbers, but will begin my notes with the familiar

Robin, (*M. migratoria*). Common; breeds abundantly everywhere. Two broods are raised, the second about the last of June or first of July.

Broad-tailed Hummer, (*I. laterastris*). Very common; breeds abundantly. Have not taken its nest. Two broods are raised. This pretty Hummer is seen in countless numbers during a short walk, and it is the most abundant of any bird in this section. I have spent hours in seeking its nest, but all the little tricks which are used with effect on the Ruby-throat are of no avail here, and the giant mosquitoes (to which those of New Jersey do not compare,) do not make it an enviable work. This bird is often seen mounting skyward for fifty to a hundred feet, where, poising for an instant it suddenly shoots downward with great velocity, only to suddenly turn as it nears the ground or bushes, to repeat the movement until it appears to be exhausted, when it perches on a dead limb of the nearest pine tree to rest; but before long it is at it again. I have seen a dozen of these birds at this amusement, (?) for amusement it seems to be to all appearances.

While doing this it is constantly uttering a sharp note, quickly repeated, also the same note when disturbed or alarmed. Have seen it far up the mountains, and it no doubt breeds up to timber line, or as high as it finds flowers.

Violet-green Swallow, (*T. thalassina*). Our most common Swallow; breeds in communities in the tops of dead pines, in corners and copings of buildings, and, in fact, anywhere it can find a knot-hole to enter. A very beautiful Swallow.

Purple Martin, (*P. subis*). Not as common as the last; breeds in hollow trees or in any suitable place. Seen in greatest numbers just before and after a shower when they collect in flocks to feed upon the numerous insects.

Northern Towhee, (*P. maculatus artica*). Common; breeds. Also another Towhee which I have not identified. The fact is, these birds seem to be of every conceivable variety, shading one into another, and as it is the breeding season I have not shot sufficient specimens to study them properly. I expect to obtain information which will bear me out in some suspicions I have entertained for the past few years, but have never had an opportunity to prove.

Wood Pewee, (*C. richardsoni*). Rather common. The nest is generally placed on a lower limb of a pine tree and near some dry water course, about fifteen feet from the ground, which by the way, is as low as you will find limbs on the pines in this country. Of more solitary habits than the eastern bird. Nest and eggs the same.

Long-tailed Titmouse, (*P. atricapillus septentrionalis*). Common; breeds in holes in pine trees. Its note is simply the finale of the eastern bird. Have never heard only the syllables dee-dee-dee. It is darker than its relative, having no white except on the belly, the rest being hoary.

Arctic Bluebird, (*S. artica*). Very common; breeds anywhere. Six pairs built under the eaves of my porch, the nest being a loose bundle of dry grass without any feathers. Their constant chattering at daylight always assures me an early start afield. It has only an imitation of the beautiful warble of *sialis*, and although only an attempt, it is rather pleasing to the ear, even if not very musical. It, however, makes up for its want of song by the brilliant plumage, the male having much more blue than *sialis*, with no red on the breast, the female having blue in proportion.

House Wren, (*T. oedon parkmanni*). Very common; breeds everywhere, in holes and between the bark of trees, principally in pines and cottonwoods. Two broods are raised, and often three. In fact, I believe they breed right through the season. Recently I found a tree with three nests;

the first in a woodpecker's hole, having already been used. Three feet above this was number two with three young, which flew when I got up to it; the male from number three at the same time, which was placed inside a loose piece of bark and was just finished.

Red-naped Woodpecker, (*S. varius nuchalis*). Common; breeds. One nest found contained one young, one egg through which the chick was appearing, and one fresh egg, which is in my cabinet, together with the old birds, the young and the stub of cottonwood containing the nest.

Lewis' Woodpecker, (*M. torquatus*). Common upon the mountains and wherever there is pine timber. It is very shy and hard to secure, at least through the breeding season, flying high and only alighting upon the highest tree tops. From its flight it would be easily be mistaken for a Purple Grackle. A very handsome bird. Have found it up to 12,000 feet.

Nesting of the Swallow-tailed Kite.

BY J. A. SINGLEY, GIDDINGS, LEE CO., TEXAS.

Having been so fortunate as to take two more sets of the Swallow-tailed Kite (*Elanoides forficatus*) during the past season, I can add more evidence as to the number of eggs in a set laid by this species.

The first set was taken on the 11th of April. The nest, as usual, was placed at the extremity of a limb, almost at the top of a majestic cottonwood tree, and directly on the bank of a small stream. The eggs, two in number, were of a reddish tint. No. 1 measured 1.82x1.43; No. 2, 1.78x1.46. No. 1 was finely marked; the larger end being entirely covered with a rich brown, concealing the ground color and running up in irregular points past the larger part of the egg. No. 2 was ordinary, being marked with a few small blotches of an umber color and large shell markings of an obscure lilac. It can be best described as purple, brushed over with a thin coat of whitening. As the nest could not be approached within ten feet, and the eggs had to be "scooped" out with a miniature insect net at the end of a pole, I cannot give dimensions of nest, which was built of sticks and the usual complement of green moss. The young chick was full formed in the egg, though soft—proving that the set was complete.

The second set was brought me by one of my collectors, on April 27th. His notes read: "Nest in a large pin-oak tree at extremity of a nearly horizontal limb, about sixty feet up and twenty-five feet from top of the tree. Built of Spanish

moss, entirely concealing the sticks used in building. Eggs taken out of nest with small bag tied to the end of my fishing pole. Both birds showing fight." I did not wonder at the kites showing when I tried to blow the egg, as incubation was so far advanced that the young birds were nearly dry in the egg. They would have hatched in the next three days. I drilled a one-eighth inch hole in the eggs, and putting them in a box, hole downwards, I set the box on a bed of the "Texas Cutting Ant" and they finished the cleaning process during the next twenty-four hours. I have saved many sets of eggs of hawks and owls in this manner.

The set, as is usual, contained two eggs, measuring 1.85x1.47 and 1.79x1.43. Ground color was dirty white (probably stained,) and irregularly marked with spots and blotches of dull brown—in the smaller egg tending to form a ring around the smaller end. I have heard of a set of three being taken in the Colorado River bottoms, but can get no particulars. I have a record of thirteen nests having been found containing eggs or young, and in only one instance—a nest with three young—was there more than two eggs or young in the nest. Can it be that Audubon depended upon hearsay in stating that four to six was the number of eggs in a set? Very often the boys whom I employ to collect tell me that they have found nests of the Red-bellied Hawk with four or five eggs; those of the Turkey Buzzard with three to four eggs; and Swallow-tailed Kite with five eggs; but I notice when I require them to authenticate the sets taken for me, those *large* sets fail to appear. I have been making inquiries in other portions of the State about this species, and in a letter lately received from Mr. E. T. Dumble, Secretary of the Texas State Geological and Scientific Society, he says: "The Swallow-tailed Kite arrives here early in the spring, leaving late in the fall. *No nest has been observed with more than two eggs.*" The italics are mine.

The Swallow-tailed Kite is an abundant summer resident in Mr. Dumble's locality, Houston, Texas, and everywhere else along the timbered portions of the coast country, consequently he can be accepted as an authority.

I have made arrangements with collectors in three counties to collect the eggs of this Kite, and we will see what another year will bring forth.

[The above paper is of far more than ordinary interest and value. It gives the experiences of a practical collector who has given much time and thought to the subject, and who speaks from his own experience.

The results obtained from the observation of such men are always of the greatest importance, and Mr. Singley deserves the thanks of all interested for his efforts to settle the facts connected with the nidification of this beautiful bird.

Audubon seems to have been the first who asserted that this Kite laid from four to six eggs, and he has been followed by nearly all writers down to the present day. Even so careful a naturalist as Mr. N. S. Goss, seems to have gone astray on this subject. In *The Auk* for January, 1885, (Vol. II., p. 19,) he related his experience in finding the nests of this species, and states that he examined four of them. "Three of these had only one egg in each; in the other there were two eggs nearly ready to hatch, and the shell of one at the foot of the tree; but I have it on good authority," he continues, "that in the near vicinity a nest with four, and another with six, eggs have been found." It is unfortunate that Mr. Goss did not give his authority for this statement, as his theory (given further on in the same article,) that crows had eaten the other eggs in the nests that he examined, must be regarded as a very fanciful one.

In the new edition of his *Birds of Kansas* (1886,) Mr. Goss repeats his statement that this species lays from "four to six" eggs. It would be interesting to know if Mr. Goss has ever *seen* a well authenticated set of four eggs of this Kite, to say nothing of a larger number, or if he knows of any one who has them in his possession.

All the sets that the present writer knows of are uniformly two in number.—J. P. N.]

The Florida or White-eyed Towhee.

BY WALTER HOXIE, FROGMORE, S. C.

I have been so fortunate the present season as to obtain several sets of the Florida or White-eyed Towhee, (*Pipilo erythrophthalmus alleni*). That they have hitherto escaped me is owing to the fact that I did not know where to look for them. While tabulating some notes last winter I was struck by the frequent occurrence of "Chewink observed in pine tree," "Towhee shot on pine sapling," and the like, and then the thought occurred to me that it was possible that near pines I might stumble upon the nest of this species. My subsequent work proves the correctness of my deduction.

All the nests of the White-eyed Towhee that I have found this spring were in pines. The height from the ground varied from four to twenty feet. This last seems to be an extreme case. The average is about five feet. The nest is rather a shabby affair composed of coarse weeds and grass

and lined with fine material of a similar character. Pine needles are freely used in many cases, but not always. The prominent and best shaped nests do not contain them. The variation in the depth of the nest is apparently regulated by the elevation above the ground. The higher the nest is placed the flatter it is. This would seem to be contrary to natural laws, for the higher the nest the more wind swung it would be. But the high nests of this bird are *all* in large trees while low ones are in small saplings. The most obvious reason, however, for the features of these high nests is that it enables the female more readily to observe an intruder. Whenever I approached a nest I see the milk white eye peeping over the edge.

The nest complement varies from two to four, oftener the former than the latter. The variation in size and markings is also considerable. I have no specimens of the common species at hand with which to compare and note differences. I think, however, that the eggs differ even less than the plumage of the birds, and that the color of the iris and the nesting habits are the most salient points upon which to base a claim for such specific distinction.

The Red-eyed Towhee is common here in the winter. At that season only an occasional lingering or belated White-eye is to be found, and even these seem to be often "links." One specimen taken last winter was in every respect intermediate between typical individuals of the two races. I have never found the Red-eyed breeding here or taken it during the breeding season. I have heard, however, on good authority that it is not rare at that time on the main land.

Since writing the above I have obtained an undoubted set of the eggs of the Red-eyed Towhee. They were brought me by a colored lad, who said that "the bullfinch (local name for the bird) had a red eye when it ought to be white." The nest was in a cassina bush "close to the ground." It is deeper than any I have procured of the White-eyed race and contains much wire grass in the lining and some cloth and rags in the outside. The eggs, three in number, were in an advanced state of incubation, but I have succeeded in preserving them. The ground color is strongly tinged with green and the markings disposed in a ring. In one of the specimens they are placed about the small end. The shape of these eggs is plainly abnormal—very nearly globular.

[A set of four eggs of the Florida or White-eyed Towhee, (*Pipilo erythrophthalmus allenii*), now before the present writer are smaller than any of a series of *P. erythrophthalmus*, and much more pointed. It is of course impossible, however, to judge from a single set of *allenii*.—J. P. N.]

Nesting of the Worm-eating Warbler

BY THOMAS H. JACKSON, WEST CHESTER, PA.

Although having repeatedly found the nest of the Worm-eating Warbler, (*Helminthotherus vermivorus*), never until the present season have I been able to place in my cabinet perfect sets of eggs of this species.

Every collector knows how discouraging it is to find the nest of some rare bird containing a flourishing brood of young, or but little better, a set of eggs so far advanced in incubation as to make their preservation a matter of great difficulty. And yet from such specimens we are able to fix the time of nesting, approximately, and profit thereby another season.

Such was my intention the present year, and accordingly on the 21st of May, 1886, I visited a large tract of wood land adjacent to West Chester, Pa., that I knew was a favorite habitat of the Worm-eating Warbler. The timber growth consisted of Beech, Oak and Chestnut; the former predominating, and the trees were of small size. A running stream with numerous swampy places, overgrown with briar tangles and alder bushes, bounded the foot of the hill, which rapidly ascended from sixty to one hundred yards. From the table-land above the leaves had been swept by the wind over the brow of the hill, and lodged in heavy masses wherever a projecting rock or other obstruction intervened. Entering the wood land I commenced to work up the hillside, carefully examining every spot likely to offer a favorable shelter, and in a short time was rewarded by finding a nest. It was neatly imbedded in the ground under a bunch of leaves that had lodged against a hickory sapling, and which formed a sheltering arch over the nest. No eggs were in it, but it was evidently finished, as its beautiful lining of flower stalks of the *Polytrichum* had been added in readiness for them. Leaving the place I went round a spur of the hill not a hundred yards distant, to a steep bank facing the east, and in a position almost precisely similar, found another nest, also completed, but without eggs. The two nests were so much alike in every respect that a single description suffices for the history of both.

Eight days later on the 29th of May I again visited them both. Creeping quietly up to No. 1 I lay down within six feet of the nest. The female still sat upon it without apparent alarm, and only left it when I was almost near enough to touch her with my hand. She then flew to the ground, tumbling and fluttering in great distress, in her endeavors to lead me away from

the nest. The male also appeared on the scene at the first chirp of alarm, and both birds remained near by until I left. The nest contained five eggs—two of which showed considerable sign of incubation, although all of them had been laid within seven days. The ground color of this set is a dull white, thickly spotted at the greater end, and more sparingly over the body of the egg, with varying shades of rich brown, approaching in one egg a delicate shade of lilac, sprinkled in fine spots. The measurements of the set are as follows: .52x.68; .54x.68; .52x.65; .51x.67; .52x.65.

Nest number two at this time contained but three eggs, and the parent birds did not appear in the vicinity, so I did not disturb them, but again visited the nest on June 2d, and found the set of five completed with the female sitting. This set was perfectly fresh, both parents were around and showed the same signs of alarm as those at the first nest. Set No. 2 differ from No. 1 conspicuously in having a bright glossy surface and being much heavier in appearance. The spotting is similar, though more on the lilac shade. They measure .55x.65; .56x.65; .54x.68; .56x.68; .53x.64.

My third nest was found in a somewhat different situation from the last two. A road running through the edge of a wood, had from disuse become overgrown with small trees. The timber adjacent had been cut away, but a fringe of saplings had been left on the bank sloping up ten feet from the road. Deeply imbedded in this bank, under an overhanging Dogwood tree, the nest had a sheltered location. A few yards below a dense thicket of briar and alder overhung a clear stream of spring water, and from its dark recesses the notes of the White-eyed Vireo and Cardinal were constantly heard from their almost unpenetrable refuge. This nest also contained five eggs—slightly incubated. The markings on this set were lighter, and more generally diffused over the entire surface in fine points, and dots of a uniform light chestnut or brown. This set measures .57x.68; .57x.67; .57x.67; .56x.70; .55x.68. Set No. 4 was taken June 1st, in the adjacent county of Delaware. At this date they were almost ready to hatch. This set of eggs was much plainer than any of the others—incubation probably dimming the colors somewhat. The nest was located on a steep hillside near the summit, covered with a heavy forest growth. The fifth and last nest of the season was found on a steep east lying hillside, and contained a single young bird a few days old, on the 6th of June.

Two other sets of eggs of four and five re-

spectively were taken in this county the present season by Mr. S. B. Ladd, of West Chester, and are now in his cabinet. The set of four has a clear, white glossy ground thickly spotted with a rich reddish brown, so profusely laid on as to almost obscure the white. They are very large, and of peculiar shape, being nearly of the same size at both ends. They measure .58x.72; .59x.69; .58x.70; .60x.71. The set of five are considerably smaller—giving the following dimensions: .51x.66; .55x.67; .52x.68; .52x.67; .53x.67. They are exquisitely marked—the greater end being so thickly covered with a rich brown as to form a wreath, and the coloring also extends to the smaller end with some fainter marks of a lilac shade. They exceed in beauty the eggs of any Warblers I ever saw. Both nests were taken on steep, rugged hillsides, and the nests correspond with those heretofore described.

From the foregoing instances of the nesting of this bird, together with others that have come under my notice, we may fix a few of the characteristic habits of this interesting Warbler.

1. It always nests on the ground, generally on a steep hillside, in the woods.
2. A stream of water, or an adjacent swamp, seems to be a desirable condition.
3. The nest is invariably lined with the red flower stalks of the Hair Moss, (*Polytrichum*), and
4. The usual nest complement is four eggs.

Occurrence of the Turkey Buzzard in Massachusetts.

A Turkey Buzzard (*Cathartes aura*), was shot by a boy at Annisquam, Mass., on September 14th, and brought into the Seaside Laboratory of the Boston Society of Natural History, situated at that place. The bird was fully identified by Mr. T. H. Morgan, of Lexington, Ky., who is interested in the study of ornithology, and perfectly familiar with the buzzards in all plumages.

On account of the lack of time and not being aware of the rarity of the bird in Massachusetts, the specimen was not preserved, but Mr. Morgan considered the specimen to be in young plumage. I will also record the Indigo Bunting as being found in the same locality, as, on several occasions I saw a pair which occupied a thicket near the roadside during June and July.—II. G. White.

Prof. Dunsmore desires to return thanks for nests forwarded for purpose of study in production of his article, "Botany of Nests."

ENTOMOLOGY.

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Sphingidae of New England.

SPHINX UNDULOSA.—Walk.

Head and palpi pale cinereous. Thorax of the same hue, with a black band on the anterior portion and a black line bordered anteriorly with white, on the metathorax. Tegulae whitish.

Abdomen dark cinereous above, hoary beneath, with a slender black dorsal line and an undulating blackish line on either side.

Anterior cinereous, with three blackish undulating lines crossing the basal portion of the wing; a band of the ground color, containing a white discal spot bordered with black, crosses the discoidal cell, curving toward the base at the discal spot; four undulating black lines cross the base of the nervules; there is also a short black line at the apex, and a longer just below it. Fringes brown, with spots.

Posteriors dark brown, with a yellowish cast, with three darker bands.

Under side hoary; two brownish undulating lines cross both wings, the basal one, which crosses the disc, being almost obsolete on the anteriors; the apical line is not so distinct on this side as on the upper.

Expanse three inches.

Mature larva, pale green, with a flesh-colored stripe on either side of the head, and seven oblique greenish stripes on either side of the body. Granulations on the head and first three segments pale yellow, on last segment black. Spiracles bright red with a white stripe down the middle. Caudal horn pale pink tipped with brownish; feet flesh-colored.

Transformation subterranean.

Pupa, blackish brown with sunken tongue-case.

Food plants, ash, lilac and probably walnut.

The Cherry Tree Borer.

BY L. E. HOOD.

Early in July I found a specimen of this Buprestid (*Dicercia divaricata*, Say.) on a fallen tree, where it was enjoying the sun, all species of this family being great lovers of warm, sunny places, this species being frequently seen on cherry trees, which are bored by the larvæ.

It is an injurious insect, working in both cherry or pear trees, and may be classed as a special enemy of our orchards.

The perfect beetle is usually about three-quarters of an inch, rarely an inch long, of a light coppery bronze color, with dark raised spots on the elytron which is striate and punctured; head set deep into thorax, both of which are densely punctured, with a slight elongate dentation on thorax; the elytron being longer than the body and, ending abruptly, gives the beetle a curious appearance, the end of the elytron looking some like a blunt W.

The antennæ is serrate looking like a fine saw, about twice the length of the head, legs of the same metallic lustre as the body, with a tooth-like prong on the middle tibiæ of the male.

The larvæ are large headed flattened, footless grubs, I have seen but one that I felt reasonably sure was a *dicerca*, it was taken from under the bark of a partly dead cherry tree. It was of a dark cream or yellow color, greatly enlarged and flattened, length slightly over half an inch, and may have been a *Chrysobothris* larvæ, though it differed much from the specimens I have seen of *C. femorata*.

I found two pupæ in the same tree, but both died before their transformations were completed. They were fully three-quarters of an inch long, being larger than the pupæ of *C. femorata*, which I have reared from larvæ taken from apple trees.

Preserving Larvæ.

BY PAUL REVERE.

Preserving caterpillars is one of the things that has been frequently tried by entomologists, and almost as often abandoned, while doubtless, if the same pains and patience had been expended as are so commonly applied to the preservation of lepidoptera it would long ago have become as successfully established.

Great care and a little genius are necessary to preserve the caterpillars, which are easiest set up in their natural form and color; and some have never yet been preserved, whatever the skill or genius applied in their treatment.

Heat has been a most successful means of preserving the caterpillar in its colors. It may be done over an ordinary stove, although a spirit lamp may prove better as it is more comfortable to work over. All the tool that is necessary is a spool covered with blotting paper, which is used to free the body from the juices and frass, by rolling it over them from head to anal extremity. This must be done upon a sheet of blotting paper

that the juices may be absorbed and not allowed to touch the outside of the skin. A straw may then be inserted in the anal orifice and held by small pins pushed through the anal flap and straw, or by winding the skin over the straw with silk. Then the skin must be gently distended with the breath until natural, and carefully dried in the heat of the flame of the lamp. They must not be scorched. Some use heated sand to distend the body and dry it. A cork stopple clipped from sheet cork with a punch may be made to fit the anal orifice and then the larvæ may be mounted by winding fine wire closely around a good sized pin and inserting the ends into the cork.

It is well to have the larvæ nearly full grown, and to let them fast for a day or two that they may eject the frass naturally, as squeezing the body with the frass in tends to injure the specimens.

Hairy caterpillars have to be soaked in a fairly strong solution of alum water, to set their hairs before they are distended and dried.

Good caterpillars to try the experiment on at first are the larvæ of *Papilio asterias* and the parasitized larvæ of *Citheronia regalis*. The colors are retained if the work is well and carefully done.

It would be well for entomologists to experiment in preserving larvæ, and then by a publication of results assist in establishing the most successful methods. The work has been splendidly done by a few, who have kept their methods a secret, and frequently at their death the way of success has been lost. This should not be so. With selfishness of this sort generally practiced the race would get nowhere in science or mechanics. A generous interchange of plans and methods and successes helps to advance any cause.

Sea Island Insects.

NON-PROFESSIONAL NOTES.

BY WALTER HOXIE.

It with considerable diffidence that I attempt a contribution for THE ORNITHOLOGIST AND OÖLOGIST, upon insects, for it is many years since I have made anything like a collection, and I never could lay claim to being anything more than a mere dabbler in entomology. Still there are many insects in this locality which I know are not widely distributed, at least in such numbers as they occur here, and I can only hope that some of these lines may contain matter of interest to your readers.

The Ant Lion is very abundant in all suitable

situations, but under my door-sill there is a numerous colony. Their little pits almost touch one another, and it is amusing to see how soon the whole neighborhood becomes active the instant one begins to dig. The first few grains of sand that fly are sure to trespass upon the next premises, whose occupant is in turn obliged to begin active operations and so in a minute or two there is a general stir. I don't quite understand how they ever get a chance to stop when they get to digging in earnest. The hours of labor and repose seem, however, to be about equally divided.

Dragon flies of numerous species are very abundant, and in the wooded swamps some delicate species occur—*Ogrion ep?* if my memory does not fail me.

The Mantis is not at all rare. I am unable to say whether more than one species occurs here, but I suspect that the very slender grey ones which I occasionally see are only the young of the larger species.

Grasshoppers proper, are not numerous, but the Locusts are well represented in both numbers and species. In some of the old fields the swarms that dart away on every side make a very brilliant display with their red, yellow and black wings.

Grillus and blatta are far too well represented for comfort about some buildings.

I sometimes see the Mole Cricket. It is called "Ground puppy," by the natives.

A very large species of *Nepa* is common in ponds and ditches. I can testify to their stinging powers. Its about all a man can bear in that line. Harvest flies are very numerous in early summer.

The beetle family contains some peculiar representatives. One enormous species, of *titijus*, is occasionally found in the ground under "bird roosts." A large weevil infests the palmetto. Tiger beetles fairly swarm upon some of the beaches. The *Scorabæide* in suitable localities are well represented and many species are peculiarly brilliant. Perhaps the most striking of the Iptera is a very large Tabanid. This family, the ascilus and the blow flies seem to be particularly well represented.

Our largest butterfly seems to be allied to the Turner's, but bigger and with more black. A large *Celias* (?) hovers about the cotton blossoms and is so closely matched with them in color that it is hard to distinguish when at rest upon a flower. The skippers are finely represented. Many other butterflies which I see in my daily rambles I am unable to refer even to families.

The Sphingidae are, as far as my present experience goes, not numerous, but at certain seasons of the year Noctuids occur in large numbers, and prominent among them is the moth of the cotton caterpillar. Of the large Bombycids I have detected as yet only the Luna.

CORRESPONDENCE.

The Destruction of Birds for Millinery Purposes.

THE EDITOR OF THE O. AND O. Sir:—I have read all that has appeared on this subject in the O. and O. so far, and finding that although the killing of birds for scientific and pseudo-scientific purposes seems to be regarded as allowable and justifiable, yet the destruction of the same creatures for millinery purposes is regarded with horror and universally condemned. I venture to lay before your readers a few facts tending to show that it is not quite so wicked to kill a bird to adorn a hat as many seem to think.

Now the slaughter of birds is condemned on two grounds. 1st, "That birds are not created in vain," and so on, which needs no answer beyond that of Dr. Northrup in the July O. and O. 2nd. That the slaughter of birds will lead to an increase in the numbers of the insect tribes and mankind will suffer. Now when we come to consider the matter we find that those who take this view of the matter seem to consider all insects as noxious, and birds as the only check on them; but it must always be borne in mind that many insects prey on others either in the perfect or larval state, such insects as the Ichneumon flies, Dragon flies, Ground beetles, Antlions and Lady-bugs being well known instances of this fact, and as far as my experience goes, birds will as soon eat useful insects as noxious ones. The Bee-martin for instance, a well known insectivorous bird, often causes great annoyance to bee-keepers in this section, in fact I have seen more than a dozen sitting on a fence in front of a row of hives and now and again flying off to catch the bees as they flew to and fro from the hives.

Again it must be remembered that most of the birds killed for millinery purposes are not specially useful to man, those most in demand being Blue Jay, Cedarbird, Goldfinch, Yellowhammer, Redwing and other Blackbirds. Now the first three are noted as birds of non-insectivorous habits, the Flicker feeds chiefly on ants and berries, while the Redwing and other Blackbirds do much damage to newly sown oats and wheat in the South. (It may be as well to note here that the Bobolink, so highly prized for its song in the North, does great damage in the Fall to the Southern ricefields, and it would certainly be hard on the rice growers to protect these birds in their breeding haunts as they are more numerous than is wanted now.)

The birds which do the most good as insect eaters here are the Field and Chipping Sparrows, neither of which is in demand for millinery purposes. The above facts are but a few out of many which have come under my notice, and the consideration of which has brought me to the conclusion that there is no very urgent reason why birds should not be killed for millinery as well as for scientific purposes, as no amount of sentimentalism can make me see that killing a bird for millinery purposes does more harm than killing one for scientific purposes, or even for sport—its only one bird the less in any case.—C. S. Brimley, Raleigh, N. C.

The A. O. U. and the Amateurs.

THE EDITOR ORNITHOLOGIST AND OÖLOGIST. Sir:—I cannot think that the O. and O., which during these many years has been a champion for truth and fair play is now to become a vehicle for misrepresentation and injustice. My friendliness toward the magazine for "Auld lang syne," as well as the hope I entertain for its future usefulness will not permit me to think that, and I, therefore, ask for a little space to endeavor to correct an error into which you, Mr. Editor, and some of your correspondents appear to have been to, regarding the attitude of the A. O. U. and the Committee on Bird Protection toward the Amateur Ornithologists.

Being a member of the A. O. U. and of that committee, it will probably be admitted that I am in a position to know something of their policy and their acts; and as I have been called "an amateur of a rather pronounced type," and as the majority of my friends are amateurs, I am not likely to be prejudiced against them, but fair play compels me to state that nothing has been done by the Union nor by any of its committees to warrant some of the remarks that have been published in your magazine. The editorial statement, for example, that "there is a tendency among the associated scientists to arrange themselves in opposition against amateurs," and, again, "the amateur has come under the ban of displeasure" is positively false. And equally false is the statement of your correspondent Philip Laurent, in the June issue, that "young oölogists have received all the blame for the so-called scarcity of certain native birds," as is also that of W. De Forrest Northrup, M. D., in the July issue, that "there is a disposition of the members of the Union to ignore the privileges of the young students of ornithology."

At the founding of the A. O. U. in New York in 1883 both Dr. Coues and Dr. Merriam spoke most eloquently in praise of the work done by the amateur ornithologists of America, and strongly urged that every encouragement be accorded to the young students, for, said they, from the ranks of the amateurs of to-day must come the scientists of the future, and the A. O. U., in the interests of the country and of ornithology, should see that they are afforded all possible assistance in their studies. There was not any dissent from these sentiments, and the policy then outlined by these gentlemen has never been departed from.

The Committee on the Bird Protection instead of ignoring the right of the amateurs have placed them on the same footing as professional scientists, and have in many instances stretched the meaning of the phrase "the interests of science" to assist collectors, rather than act with severe strictness. I have been informed by a taxidermist that a member of the committee offered to assist him in procuring a permit, yet I have read some of his advertisements which were scarcely consistent with "the interest of science" as generally interpreted. I know that another member of the committee obtained a permit for a young collector who had taken so little interest in the science that he had never even heard of *The Auk*.

Such being examples of the attitude of the Union toward the amateurs it has been rather exasperating to one who understood the true state of the matter to read the contrary statements and unfair insinuations which have been furnished to the subscribers of the O. and O. of late, and I hope that in future, you will find some better use for your columns, or if you must print such stuff, to fill your pages or to gratify some of your patrons, you will please not publish it in the name of the amateurs, for they want none of it.—Montague Chamberlain, St. John, N. B.

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No. II.

Some Ornithological Explorations in the Dead River Region of Maine.

BY F. H. CARPENTER.

(Continued from Page 147.)

53. *Melospiza fasciata*, (Song Sparrow). This species was observed under about the same conditions as the Grass Finch, except it was noted further north, being seen in the scrub "plains" below Eustis.

54. *Passerella iliaca*, (Fox Sparrow). Observed in September in its southward migration. They were in no hurry, as a flock remained about the camps at Seven Ponds over a week, and we left them there when we came away. None seen in June.

55. *Molothrus ater*, (Cow Bird). Mr. Freeborn informs me that this species is to be met with every summer. I saw a female in front of the Mt. Abraham House at Kingfield, amongst the crab-apple trees, with evident designs against a nest of the Yellow Warbler.

56. *Agelaius phoeniceus*, (Red-winged Blackbird). Very locally distributed. A few were nesting along the Sandy River, and a small colony held possession of a marsh near New Portland. Several large flocks were seen in August.

57. *Scolecophagus ferrugineus*, (Rusty Blackbird). This species was seen at both Tim and Seven Ponds. At Flagstaff Lake they were observed in small flocks in September. Along Dead River just below Stratton they nested, evidently in considerable numbers, but I was unable to find only two nests. According to Mr. Samuels, who affirms to have found nests on the Magalloway River, they are "large structures and can be seen at a considerable distance." Such is not the case at this place, as they nested in the small hemlocks and were very effectually hidden from view. In my own experience during the ascent of the Magalloway in 1884, I could not discover their conspicuous nests. Their eggs present more of a contrast with *Quiscalus* than one would suppose,

being blotched, with none of the lines so characteristic of many of the *Icteride*.

58. *Quiscalus purpureus*, (Purple Grackle). A few seen at North Anson in the village streets. They evidently bred in the vicinity, but we did not remain a sufficient length of time to investigate.

59. *Corvus frugivorus*, (Common Crow). Nested in the small hardwood forests of the valley of the Carribossett river. In autumn and late summer they assembled in immense flocks on the cleared fields, often keeping company with a flock of sheep for a whole day. None were observed in the interior of the evergreen forests.

60. *Cyanocitta cristata*, (Blue Jay). This species was as noisy and self-assertive as ever, in this wilderness. In spring it kept more to the woods, where they were to be met with in jovial bands of a dozen or more, although it was in the breeding season, when well regulated families should be in *pairs*. In latter summer they were very gregarious, keeping in large flocks, and they presented a very pretty sight when flitting about some forest edge, apparently discussing matters of moment to their interest. Their nests were found in June and were placed at a considerable height in the spruce and hemlock, and resembled the well known type of this species.

61. *Perisoreus canadensis*, (Canada Jay). Common throughout the entire wilderness north of Dead River. I do not hesitate to ascribe it as breeding in this region, having shot in June young birds of the year, and found about the camps at Seven Ponds old nests which were without doubt constructed by this bird. It may not be out of place to mention two sets taken in the Parmachenee country. A set of three taken from a nest ten feet up in a spruce, March 28, 1881. This set bore some resemblance to those of the Blue Jay, but were lighter in color and more elongated. They are in the possession of my friend Dr. E. A. Patton of Minneapolis. The second set was taken three days later in the immediate vicinity of the former. It contained four

eggs, which differed from the first set greatly in coloration, being light grey, with bright spots of brown scattered sparsely over the surface. The nest was bulky, and nearly every obtainable variety of moss, lichens, hair and feathers entered into its make up; these were placed on a foundation of rather coarse twigs.

The Canada Jay with its various uncomplimentary appellations, shares with the rest of its family the contempt of students of bird-life. I may therefore be accused of rank heresy, when I state that the "Moose Bird," as I love to call him, is my first choice among all the birds of the Maine forests. He greets me, when I pitch camp for the night, with demonstrations of welcome, calls about him his particular chums and acts well his part at the preparing of the evening meal, and retires for the night in some adjacent evergreen that he may be convenient for the breakfast crumbs. He devours the "angle-worms" in my bait box, when fishing from a boat, and ransacks the camp provisions in search of "goodies" if left unguarded. He may be a thief, but his jovial companionship is beyond the price of his board bill, in the dark still forests he claims as his home.

62. *Tyrannus carolinensis*, (Kingbird). Noticed sparingly in the vicinity. "They breed at Farmington."

63. *Sayornis fuscus*, (Pewee). Common around the farms south of Kingfield. Breeds under same conditions as elsewhere. Found one nest placed under the shelving upturned roots of a tree; truly a natural situation.

64. *Contopus borealis*, (Olive-sided Flycatcher). A not common summer visitor of the county, seemingly evenly distributed throughout all cleared portions. A nest was found in a sugar maple orchard at Stratton. Contrary to published descriptions I found the nest to be quite prettily and substantially built of fine rootlets, twigs and hair. It was very shallow. The eggs were three in number, dull white, faintly spotted with lilac and brown. Another nest of similar construction, containing three eggs, was found by my companion, Dr. Northrup. This latter nest was placed in a walnut tree in the woods.

65. *Empidonax pusillus* *trailli*, (Traill's Flycatcher). A few specimens were seen near New Vineyard and Kingfield. The finding of their nests was an event for which I must, like a certain ballad hero, say "better luck next time."

66. *Empidonax flaviventris*, (Yellow-bellied Flycatcher). A single specimen was secured at Flagstaff. I am positive I saw several at Stratton while riding on the stage. My experience with

their nidification in other portions of the State, will be made the subject of a separate article at an early date.

67. *Trochilus colubris*, (Ruby-throated Hummer). One was secured at Tim Pond in August, 1885, and another seen at same place and date. On the stage road between Eustis and Kingfield is a burnt district comprising several thousand acres, which is covered with a bright, handsome red flower, called by the natives "fire weed." On this tract many Hummingbirds were seen in August, 1884. None were seen around the cultivated farms.

68. *Chatura pelagica*, (Chimney Swift). Occurring in usual numbers about the houses in the farming districts.

69. *Chordeiles popetue*, (Nighthawk). Very common around Eustis, where in an open field on the "heights" they breed in numbers. They were also common about the lakes in the forest during September, often darting at the artificial flies on my line when casting for trout.

70. *Picus villosus*, (Hairy Woodpecker). Frequently seen, but not as common as I judged it would be, previous to my visits in this region. Several instances of its nesting was noted in the tall dry stubs of the brush clearings. In winter they were abundant at times at Kingfield.

71. *Picus pubescens*, (Downy Woodpecker). A very common breeder. In a birch growth on a mountain side in Jerusalem, I found nests in the partly decayed stubs of this tree. They were nearly absent in winter.

72. *Picoides arcticus*, (Black-backed Three-toed Woodpecker). The most common Woodpecker of the interior forest, and were to be found in all sections of the counties. Erratic in movements, being seen at times in great numbers and again disappearing entirely for a number of days. Their tenacious hold upon the rough bark of the spruce trees would be retained after being shot. A nest excavated in a living spruce, on Boundary Mountains contained young on June 9, '79. Another nest was in a dead stub, near Moose River, and contained four eggs, being found by Dr. Northrup May 23, 1885. Other nests found by myself in other portion of the State did not differ.

73. *Picoides tridactylus americanus*, (Striped-backed Three-toed Woodpecker). I can record only one specimen of this species, which was taken near Seven Ponds, Sept. 4, 1885.

74. *Hylotomus pileatus*, (Pileated Woodpecker). More conspicuous than abundant, the Logcock is a resident of the evergreen forests. Its resonant "soundings" may be heard at almost any time in the spring, and its heron-like flap of the wing

added to its rolling flight make it a conspicuous feature of the woods. It can use its feet in a powerful manner, and I have watched it on one occasion strip the bark from a lightning scathed hemlock with the cleverness of a professional "peeler" at the lumber camp. Two nests were found near Tim Pond, but no eggs were secured, but a set of five in my collection were taken in this vicinity by hands, now forever at rest. All nests were in the decayed tops of spruce trees.

75. *Colaptes auratus*, (Yellow-shafted Flicker). Common around the farms at Eustis and Stratton as well as farther south. Nesting habits as elsewhere; seen in large flocks in the pastures in September

76. *Ceryle alcyon*, (Belted Kingfisher). Nested in the banks of the Sandy River. Saw a pair each year in August about Tim Pond. Also saw several while fishing on Tim Brook in the woods, far from any congenial nesting site. They evidently had an epicure's taste for fingerling trout.

(To be Concluded.)

Notes on Some Birds of the Great Smoky Mountains.

BY ARTHUR LEMOYNE, M. D.

(Continued from page 148.)

POLIOPTILA CÆRULEA.
Blue-grey Gnatcatcher.

This species is common in certain districts, but not very evenly dispersed, seeming to prefer the hard wood growth of the lower table-lands about the cultivated farms. I could find none at higher altitudes among the black growth on the mountain sides. It was first noted in Monroe County as early as March 30th, but it usually does not arrive until the first week in April. The first arrivals are quickly followed by the bulk of the migrants and they speedily betake themselves to their favorite haunts, to which they limit their movements. The greatest altitude at which they were found was about 1,800 feet, though they might have occurred at a greater height had their desired environs there flourished.

They nested along the small streams in greater numbers than elsewhere, the old lichen-covered branches of the oaks, giving them protection by reason of strong similarity in outward appearances of both nest, and the foundation upon which it was placed.

The musical abilities of this bird have, with a few exceptions, been ignored by writers. Mr. C. J. Maynard gives the first mention of it that has fallen to my notice. I have frequently heard the

low yet distinct warble of the males, during the mating season; at other times I have never heard any song. The song of this Gnatcatcher varies in both volume and note, sometimes it is so faint as to require close attention to catch the strain and at other times a different song would be given in louder tones. This latter, as nearly as I can express it, seems to my ear like *twing-twing-twing-twing*, *ree-ree-ree-ree*. The first half in a rising scale and the latter descending. This is followed by the low jumble of indescribable warbles which defies any representation.

Without any exceptions I have always found the nest completed and first set of eggs deposited by the second week in May. The nests are greatly alike in composition, being large examples of the Ruby-throat Hummer. The set of eggs I find to be usually four.

DENDROICA DISCOLOR.

Prairie Warbler.

This dainty little warbler was heard for the first time in '86 on April 12th, for be it known the curious "breezy" note of this bird may be heard for days before the vocalist is *seen*, unless especial attention is given to the game of hide and seek. It loves the scrub and second growth, and I never found them as plenty as in the small growth which followed a burnt tract of woodland in Blount County. Every clump of bushes contained one of these birds, and their curious song—if it can be called such—was heard on every hand. I hope I may be pardoned when I affirm that these warblers remind me of some insects. They are heard at best on sunny days and in sunny spots, while their notes resemble the buzzing of some large locust. None of these birds are found in the swamps or the evergreen growth of the mountains. Sunshine and heat seem to be necessary to their vitality. As may be assumed, from the habits of the bird its nest is one of the "finds" of red letter days of collectors.

During the third week in May I observed a pair of these warblers frequenting a patch of wild rose and thorn bushes, and when a little later I heard the male singing from a red maple which grew in the center of the thicket, I felt sure his mate was engaged in incubation, so accordingly I proceeded to search for the nest. My first skirmish with a refractory thorn bush betrayed my hostile design, and the male hushed his vocal efforts and darted to cover. My procedure was slow if not sure, but the nest was found snugly placed at the intersection of several branches of a wild rose bush. It was exceedingly pretty and substantial, and the four eggs which it contained were to my eye very beautiful, be

ing spotted with two distinct shades of brown and purple. They were oval in shape, being pointed at one end, save one which was equally blunt at both. As I reached the outer edge of the thicket on my return, the male flew to his former perch and resumed his song. Save for the appearance of my clothing, nothing would indicate the tragedy I had just enacted.

VIREO SOLITARIUS?

Solitary Vireo.

I have been so fortunate as to secure specimens of the Solitary Vireo, in both Northern New England and Tennessee, but until recently I did not consider any slight difference. Mr. Wm. Brewster first gave public notice to the new variety *atticola* which he claims as peculiar to the "mountains of western North Carolina." Mr. Brewster is correct as to this variety being found in these mountains and without expressing any opinion I would say that I have secured specimens which were true *solitarius*, and also of the darker type, in these mountains, as the following will show.

Vireo solitarius, (860 author's coll.) Monroe county, Tenn., 1,700 feet. Description: Upper parts olive-green; crown and side of head bluish-ash; white line about eye, lore-dusky. Below, white; sides tinged with olive; spurious quill, etc. Enough is given in above description to show it is a specimen of *V. solitarius* without further quotations.

A specimen which *may* be of the other variety may be described as follows:

Vireo solitarius? (945 author's coll.). Blount county, 3,200 feet. May 18, 1884. Description: ♂, above dark plumbeous, *entire*; beneath white; sides yellowish; wings dark brown, feathers edged with green; two bands of dull white across wing; coverts same as tail; outer tail feathers edged with white; white ring around eye; lore dark.

The above condensed description shows a specimen which differs from *V. solitarius* proper.

Another specimen from Maine approaches it closely.

"*Vireo solitarius*? (3480 coll. of F. H. C.). Eustis, Maine, June 4, 1884. Male, adult. Upper parts nearly black; some greenish on rump; crown like body; quills edged with green; bill stout.

The above brief outline taken from the collector's full description serves to prove that the variety does extend from these mountains.

I leave the question as it now stands, trusting the above cited examples will throw some new light on the range of the new species.

Field Notes on Some Birds of Colorado.

BY CHARLES F. MORRISON, FT. LEWIS, COL.

II.

Western Kingbird, (*T. verticalis*.) Does not breed? but comes up from the foot-hills to feed, about the first of August, or after the young take to wing. A very abundant bird throughout the west, ranging from middle Kansas to the mountains, north, certainly to the Yellowstone river. I found it very abundant at Fort Laramie, Wyoming, often finding as many as four nests in one pine tree, always in ravines among the foot-hills and bluffs; nest much resembles that of its eastern relative, and eggs (4-5) alike, but more globular. They are very noisy during the breeding season, but at other times are almost silent; perched upon a favorable branch they catch innumerable insects. Length, 8 13-16; tail, 4; bill, $\frac{3}{4}$; wing, 6 5-16; tarsi, $\frac{3}{4}$. Bill and feet black; flame-colored patch on crown; belly and under tail coverts yellow.

Great Northern Shrike, (*L. borealis*.) Have seen but three specimens, the first on the 7th of August, the other two on the 30th; probably breeds. I give the following description, which differs somewhat from other writers. Back and head bluish-ash, below whitish, *not* always vermiculated with many blackish lines, a black bar along side of head, not meeting its fellow across the forehead, and *not* always interrupted by a white crescent on under eyelid. Wing and tail black, the former with large white spot at base of primaries, all the feathers tipped with white except the first 3-5 primaries. Bill black, flesh-colored at base, feet black. The young are more brilliant in color, other writers per contra, at least I have always found them so, a fact which does not hold good with most of our birds.

Black-chinned Hummer, (*T. alexandri*) My notes in regard to the Black-throated Hummer refer to this bird. I have since writing them taken a number of specimens. Although both species are present the Black-chinned are far more abundant. I give description. Head, back and middle tail feathers metallic green, chin black, reflecting a beautiful steel blue, breast olive and spotted crissum white, sides and wing coverts like back, under tail coverts like breast, short white stripe on edge of wing at base of first primary. Tail emarginate; wings when in natural position reaching end of tail. Bill, .73 and black; wing, 1.83; tail, 1; tarsi, .15; middle toe, .17. Total length, 3.50.

Belted Kingfisher, (*C. alcyon*). Not an abund-

ant bird owing to lack of food—a small minnow which inhabits the streams but are scarce. Have seen but two specimens of this bird, one of which (a ♀) I have mounted for parties here. Too well known for further comment.

Green-tailed Towhee, (*P. chlorurus*). Very common on the mesas in the thickets or scrub oak; a very shy bird and rarely seen except when flitting from one bush to another. The nest I have not found and I think it is pretty well concealed, but this spring I was surprised to find so many eggs (broken) lying about at the foot of the oak bushes, and believe they are of this bird, being white with red spots, but of this I am not positive. A very pretty Towhee. The description given by Dr. Coues in the "Key," is all right except as to dimensions. Length, $5\frac{1}{2}$; wing, 4; tail, $3\frac{1}{4}$; tarsi, $1\frac{3}{8}$. I will say here, that I measure all specimens in the field and as soon as shot. The dimensions given in these notes are averaged from all birds of a species obtained. As I am writing on birds of one locality and collected by myself I am not obliged to examine skins which might be stretched or shrunken, as I would be obliged to do in the case of birds from parts of the country in which I had not collected. I make this statement as a sort of an apology for differing somewhat from older and more experienced writers, but I fully believe that we should state things just as we find them, and not feel at all diffident about it, as by so doing the study of ornithology is advanced faster and surer. Too many of our young writers are apt (because their observations do not concur with those of the scientist) to keep their notes in their note books, whereas if they would give them to the ornithological world the science would be benefited and their efforts more highly appreciated. Begging the reader's pardon for digressing, I will continue my notes with the

Long-crested Jay, (*C. stelleri macrolepha*). Very common in the pine timber, going about in troupes of from six to twenty or fifty. They have a variety of notes, one much like the Blue Jay (*C. cristata*), another call note much like that of the Magpie (*P. rustico nuttallii*) also when disturbed it scolds in a voice like no other jay. I have heard that when on the wing or perched in a tree it looks like quite a small bird, and one will be surprised to find it so large when in the hand,—about a foot in length. Wing about 5; tail about 6. These measurements are from a dilapidated specimen and so I do not vouch for the accuracy of them. They are hard to approach, and although I have seen immense troupes of them I have only been able to shoot but the specimen above mentioned, which I killed with No. 6 shot while hunting prairie chickens.

Observations on the Development and the Decay of the Pigment Layer on Birds' Eggs.

BY ALEXANDER M. M'ALDOWIE, M. D., VICE-PRESIDENT OF THE NORTH STAFFORDSHIRE NATURALISTS' FIELD CLUB, ENGLAND.

Read Before the North Staffordshire Field Club.

PART II.

SPECIFIC DECOLORISATION.

In examining the evidence of decolorisation of eggs, it will be necessary to enter somewhat into the details of the modification of several groups of birds to show the various ways in which the eggs are protected from the stimulating influence of sunlight. With reference to this, eggs may be divided into three classes, viz.:—(1) those laid in holes or covered nests, (2) those which are covered by the parent bird with leaves, weeds, &c., and (3) those covered by an incrustation of calcareous matter. The eggs of nocturnal birds are white or faintly coloured but are included in the above.

1. Eggs deposited in holes or covered nests.

The egg of a woodpecker, or any bird where the whole of the family lay white eggs and are identical in their mode of nesting, affords no evidence of decolorisation. But when we find one species only in a family laying in a covered nest, and its eggs white or faintly coloured, whilst those of the other members are laid in open sites and are highly pigmented, we may fairly argue that the pigment covering has degenerated or vanished. Thus all the Thrush family lay richly coloured eggs in open sites, whilst the Dipper, a closely allied species, lays a white egg in a domed edifice. The egg of the Black Redstart, one of a genus where all the other members lay coloured eggs, is exceptionally pure and white. Again, the Auk tribe is notable for laying bright coloured eggs on bare ledges on the cliffs; whilst the Puffin, one of the family which breeds in rabbit holes, lays an egg, described by Hewitson as "sometimes spotless, but more frequently marked with various tints of colour, but so very faint and indeterminate as to appear as though they were seen through the shell." The Wheatear is a good example of an egg which has undergone almost complete decolorisation. One of the most interesting cases is that of the Virginian Quail. This is the only one of our gallinaceous birds which builds a dome-shaped nest, or, indeed, may be said to build any nest at all. Yarrell states that the eggs are white, although Hewitson figures one of a faint buffy tint, with minute spots. All the

rest of this order lays eggs with a well-developed ground tint, and usually richly covered with dark coloured markings.

2. *Eggs covered by the parent bird with leaves or other vegetable matter.*

There is no doubt but that a loss of pigment has resulted from this mode of concealment. It is interesting to speculate on the reasons which have led certain birds which breed on the ground to adopt this method of protection, whilst others trust to the colour of the eggs. In the Grebe tribe it seems the only method possible. Protective coloration of the eggs would be a much less effective mode when they are deposited on the top of a large and prominent heap of decaying water plants; and it would be impossible for them, on account of their peculiar wings and legs, to escape from the nest unless it were close to the water's edge. "It would seem that whatever they do must be done in the water," writes Naumann; "they cannot even rise upon the wing without a preliminary rush over the surface of the lake; from dry land they cannot commence their flight." The loss of pigment is complete in the Grebes, as it is probable that the wet decaying vegetation shuts out the light more completely than the loose dry materials employed by the Ducks, Pheasants, &c.

In the duck tribe this method has probably been adopted because of the size and large number of eggs laid. Protective coloration could not have afforded sufficient concealment for eight or ten or even more large eggs. The amount of decolorisation varies in this tribe. In some instances, as the Eider Duck, the egg is of a pale asparagus green, in others it has only a very faint greenish hue, whilst in the Sheldrake, which breeds in holes, the loss of pigment is complete; the egg being of a "smooth shining white."

In both the above groups the whole of the family adopt the same mode of concealment, but why should the eggs of the Pheasants and Partridge be covered, whilst those of the Grouse are laid openly? The two former birds breed in sheltered woods and hedgerows, the latter on bleak and exposed moors. If the Grouse covered its eggs with dead vegetable material it would soon be carried away by the strong winds which sweep over the moors.

3. *Eggs covered by an incrustation of calcareous matter.*

Only three British birds' eggs are coated with this peculiar chalky substances, viz., the Cormorant, the Shag and the Gannet. The hard shell beneath is of a faint bluish-green colour in the two first-mentioned species; in the last it is usually pure white, but sometimes tinged with blue-green.

GENERIC DECOLORISATION.

The fact that certain birds deposit white eggs in fully exposed situations has been pointed out as proof that the colouration could have no reference to the exposure to light. But no notice has been taken, as far as I am aware, of the fact that all these instances occur in families where the majority of the species breed in holes or dark places. In this case decolorisation must have taken place at a much earlier period in the life-history of the family or genus than in the preceding instances. They are probably descended from some ancestor which bred in holes; and the change to open nests in a few members of the family taking place long after the colouring matter had disappeared has not been followed by a restoration of the pigmentary covering. For proofs that pigment had at one time existed in these groups, we must look to the eggs of allied species. They occur in the Owls, the Pigeons, and the Petrels.

"There is a strong and perfect similarity amongst the eggs of the different species of Owls," writes Hewitson, "which we could scarcely expect to find in the eggs of birds which differ so much from each other in their mode of breeding. The eggs of those species which are deposited in the hollows of old trees and deserted ruins, and those which are found on the bare sod, and exposed to the broad light of day and the pelting storm, are alike without colour." But the large majority of the species breed in dark places, and, being nocturnal in their habits, all have a tendency to avoid light. Now their nearest congeners, the Harriers, which link their family with the Falconidae, bear a close resemblance to them in many points, *e. g.*, the loose and flocculent character of the feathers, and the circular arrangement of those about the face; and the affinity on comparing the skeletons of each is most decided. In the colouration of the eggs also the resemblance exists, the eggs of the Harriers being white, or sometimes a pale skim-milk colour, more rarely spotted and smeared with brown.

All the Columbidae, or Pigeon tribe, lay two pure white oval eggs. All, however, lay in crevices in rocks, hollow trees, deserted rabbit burrows, or dense thick trees or bushes. This, together with the fact that the nest of the arboreal members are crude platform-like structures, quite unlike those of any other bird, show that they are descended from an ancestor which bred in holes. One of the Australian Ground Pigeons is said to lay buff-coloured eggs. The nearest ally to this order, Pallas' Sand Grouse, lays three oval eggs, similar to a Pigeon's, but coloured like a Plover's.

The petrels are all more or less nocturnal in their habits, and all lay white eggs. The Fulmar deposits its egg openly, on ledges on the cliffs, but the other members of the group lay in crevices in the rocks, under stones, or form burrows to the depth of two or three feet. All the rest of the Laridæ lay richly coloured eggs.

It will be seen from the above that the decolorisation takes place in three ways. In some—Swallows, Wrens, Tits, &c.—the ground tint disappears first, leaving the egg more or less thickly marked with small light coloured spots; in others—Starlings, Little Auks, &c.—the markings vanish first; while in a third class—Puffin, Hen-harrier, &c.—both ground tint and spots appear in a rudimentary degree.

In this paper reference has only been made to the eggs of British birds, not only because the fauna of these isles form a very complete and typical group, but because the views adduced are based solely on the study of thousands of specimens British eggs in my own and other collections, and upon observations made on the moors, in the woods, and by the seaside.

Evidence has been brought forward to show that the pigmentary coat on birds' eggs came into existence at a very early period of their life-history, and existed in the eggs of the progenitors of all the extant species. It has also been shown that the range of colours on birds' eggs is very limited, but follows the usual course of pigmentary changes; that the pigment is unstable and variable, making the process of change and decolorisation a simple one; and that its primary use is for protection from the solar rays, but that it afterwards became modified for concealment.

Lastly, it has been shown that eggs acquire a highly developed pigmentary layer, or lose their pigment entirely, according to whether they are exposed to the full glare of the sun or laid in situations inaccessible to its rays, and that the intermediate degrees of coloration are in direct ratio to the amount of light to which the eggs are exposed.

The two causes which determine the colouration of eggs—protection from the sun's rays and concealment from observation—act conjointly; they are not antagonistic like natural selection and sexual selection. The limited range of colours shows that natural selection alone operates. Darwin states that, in regard to structures acquired through ordinary or natural selection, there is a limit to the amount of advantageous modification in relation to special ends; but in regard to structures acquired through sexual selection there is no definite limit; so that, as long as the proper

variations arise, the work of sexual selection will go on. That the causes are different from those which produce the colours of the birds themselves, is shown by the fact that eggs from tropical regions do not surpass in brilliancy of tint those of more temperate climes.

Nest and Eggs of the Short-eared Owl.

BY G. F. BRENNINGER, BEATTIE, KANSAS.

During the spring of 1884 it was my good fortune to find the Short-eared Owl (*Asio accipitrinus*) breeding. Like most of the owls, they are residents, but are found most plentifully during the colder months. In the middle of April nesting is first begun. Their nest is a mere depression in a bunch of old grass. The owls inhabit the vast uninhabited prairies along sloughs, where the banks shelter them from the cold winds of winter and the burning rays of the sun in summer. A great number of their nests are burnt every spring by the prairie fires, and after the first set has been destroyed a second set are laid. This I think was the case with my sets.

My first set was taken on May 1st, and contained seven eggs of the pure white surface and spherical form so common with owls. The second set, of six eggs, was taken May 4th, and incubation was slight in both.

The ears or tufts of this species are only seen when the birds are looking at any object, as at other times they are hidden. For the past two seasons I have been requested to try and obtain some sets of their eggs, by some of our most advanced oölogists, and many weary searches and tramping over prairies have only proved to be repeated failures, and I have not found nor seen any of their nests since.

The food of this species consists chiefly of mice, insects, and ground squirrels. Seldom, if ever, do they deprive the farmer of his chickens, and only in one instance have I known them to catch pigeons. This was while they were sitting on the outside of their coops during a severe snow storm, and the owls were probably driven to do this by hunger. The farmer is ignorant of this fact, however, and shoots them whenever opportunity occurs. I have personally known boys to place an open steel trap upon a high pole. This seldom fails to catch an owl, as they perch on the pole at night. In the warmer part of the year these owls are rarely seen, and perhaps they seek remote places, in the shade of dark gullies, where they can live in peaceful solitude.

THE ORNITHOLOGIST —AND— OÖLOGIST.

A MONTHLY MAGAZINE OF
NATURAL HISTORY,
ESPECIALLY DEVOTED TO THE STUDY OF
BIRDS,
THEIR NESTS AND EGGS.
DESIGNED AS A MEANS FOR THE INTERCHANGE OF NOTES
AND OBSERVATIONS ON BIRD AND INSECT LIFE.

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Editorial.

An extra edition of this number will be sent out as samples. Parties receiving duplicates, will favor us by handing them to friends who are interested.

We publish a communication from a legal gentleman of New York. It is a fair illustration of the stupid manner in which the bird laws are enacted. We are informed that a number of gentlemen who were well versed on the subject and the requirements, devoted considerable time in drawing up proposed alterations, when they were presented, amendments changed them into what appears to us to be a farce, with a law that makes it a *crime to have a wing in one's possession without a permit*. Hundreds of store windows in New York City are filled with birds, wings and feathers. The fact is a larger piece has been bitten off than can be swallowed. The wisdom of such strictures is questionable. That great social lever, public opinion, may condemn wholesale slaughter for millinery use, but it will not "fail to decry the injustice of the situation, when a young

student desires to collect birds and *cannot* and a scientist desires to collect birds and *does*." The object of each is the same, and "why art thou better than thy brother."

The past year has been a very unhealthy season for amateur publications. During the first part we received them by scores. They have gradually dropped out of line until now there are but some half dozen. Some we have regretted to see fall, others deserved their fate. A party who starts an amateur natural history paper is almost certain to come to grief. Those who have valuable communications should consider the importance of placing them where they will *remain* on record. The ORNITHOLOGIST AND OÖLOGIST and its young friend the *Auk* we believe to be the surest of the future from present appearances, from the fact that they are both published under the impulses of love for the cause.

There are thousands who should support both. The amount of the subscription is a trifle compared with what is wasted by naturalists. A complete file of these publications is as important as the contents of the cabinet. During the years 1884-5 37,900 copies of the O AND O. were published, a large portion were sent out as samples and resulted in but about 200 increase of circulation.

Of 500 paid subscribers at the start at the present time, but 150 of same names are on the list. This is caused by the fact that with many, the study is of brief duration. Like school life, a short term is what a publication of the nature of the O. AND O. has to contend with, and is a reason why the life long student should stand firmly in its support.

In reply to several enquiries relative to the movements of the special correspondents of the ORNITHOLOGIST AND OÖLOGIST, we would say that Dr. LeMoyné is at present in Tennessee, where he will remain until December, when he will go as far south as Key West. Mr. C. F. Morri-

son is in the mountains north of Fort Lewis, Colorado. He may change his base of operations by another spring. Dr. W. DeF. Northrup left this state Oct. 18th, for Mexico and Central America.

New York Law on Song Birds.

The latest act of the Legislature of New York in regard to song birds was passed May 20th, 1886. It abrogates all previous acts on the subject and consists of eight sections. The Governor declined to sign it, but it remaining in his hands for the statutory ten day, then became a law :

Section 1 provides :

"That no person in any of the counties of this State shall kill, wound, trap, net, snare, catch with bird lime, or with any similar substance, poison or drug, any bird of song, or any Linnet, Bluebird, Yellow Hammer, Yellow Bird, Thrush, Woodpecker, Catbird, Pewee, Swallow, Martin, Bluejay, Oriole, Snowbird, Grass-bird, Grosbeak, Bobolink, Phoebe-bird, Humming Bird, Wren, Robin, Meadow Lark or Starling, or any wild bird other than a game bird. *Nor shall any person purchase or have in his possession, or expose for sale, any such song or wild bird, or any part thereof, after the same has been killed.*"

It will be observed that § 1 prescribes that *no person*, (it is not confined to the person "who kills, wounds, traps, &c.") but "*no person can purchase or have in his possession, or expose for sale any such song or wild bird, or any part thereof after the same has been killed.*"

Section 3 provides, that § 1 shall not apply to any person holding a certificate, [as afterwards in § 4 provided,] authorizing him to kill song birds, &c., for scientific purposes.

Section 7 provides that a violation of this statute is a misdemeanor, incurring the penalty of imprisonment for not less than five nor more than thirty days, and a fine of not less than \$10 nor more than \$50, or both, at the discretion of the court.

Therefore, according to this perspicuous and brilliant law, if I have in my possession in my house, a stuffed and mounted song or wild bird, "or any part thereof after the same has been killed," no matter who killed it, or how long it has been killed, mounted and stuffed, or through whose hands it has passed before reaching me, I am liable to be prosecuted for a misdemeanor, and to be subjected to fine and imprisonment, unless I can show a certificate pursuant to § 4 authorizing me to kill birds for scientific purposes.

The Legislature of New York has not recently been conspicuous for clearness in its legislation, but it does seem that it could have managed a little act about song birds without committing itself so plainly to what it certainly did not mean.

—W. B. C.

PRACTICAL TAXIDERMY.

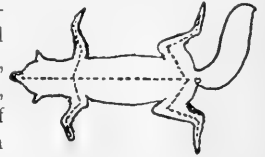
BY FRANK B. WEBSTER.

CHAPTER XV.—MAT MAKING.

The use of skins for floor mats is so common that all taxidermists should be familiar with the method of making, which is very simple.

Skins can be obtained, tanned, ready for use from furriers. In selecting, examine the heads carefully to see that they are perfect. See that the long hair well covers the short under hair, and, that it *does not shed* when stroked by the hand. The value depends almost entirely upon the condition of the fur. In consulting a furrier lately in regard to the value of a black fox I was surprised by the statement that they varied from \$30 to \$175, depending upon the quality of the fur.

If instead of purchasing, you have the animal, cut it on the under side from lip to tail and from foot to foot. Skin completely, taking out all bones, clean carefully, cutting away all gristle, &c.; rub flesh side of skin with salt and alum



and tack it up flesh side out, where it will dry quickly. Do not delay, for if the hair starts it will surely come off in the tanning process. If you desire to stuff the head to show with mouth open, clean the skull and retain it.

When the skin is dry send it to a professional tanner. It will be cheaper to pay him than to do it yourself. (A simple receipt for tanning was given in O. and O., in a previous number). When the skin is returned it should be soft and pliable. Never use arsenic on a skin that is to be tanned, "so says a tanner." Take the skin and dampen it by rolling it up for a few hours in damp cloths. Next stretch it out as much as it will bear and let it remain a few hours.

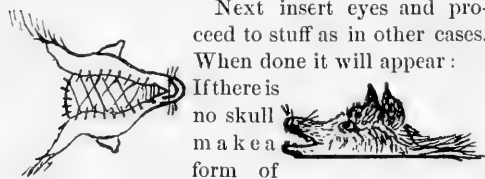
STUFFING THE HEAD.

Cover the head with wet cotton and let it remain till quite soft. If the skull is to be used and the mouth opened, prop open the jaws as desired, mould with plaster to fill where meat was removed and to set jaws. Make gums and tongue as previously directed. Cut from a piece of strong card board, a piece the shape for a base, not as long as the nose but as large otherwise; place the skull on it and wire it with fine wire; fill in the eye sockets with putty. Next draw the skin over the skull, and with a long needle and



strong twine sew it; the stitches on the bottom will not show—it will appear on under side.

Next insert eyes and proceed to stuff as in other cases. When done it will appear:



If there is no skull make a form of

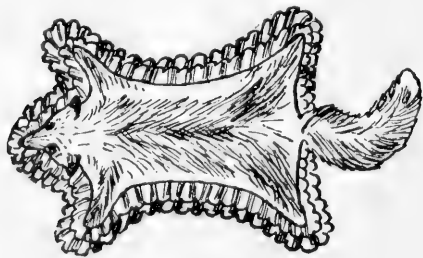
excelsior, using fine wire to wind it firmly, and give it a coat of clay, just enough to smooth it, and proceed as in the previous case.

Papier maché forms are made in Europe—artificial teeth and tongue complete. They are very natural and all that is required is to draw the skin over them. I understand that they have been made in this country but I do not know where they can be obtained. The above described processes are known as hard filling.

Soft filling may be used as follows: Make a form of wood the size and shape of the head when skinned. Stretch the damp skin over it, tacking it down; let it remain till it dries on the shape. Stuff firmly with cotton. The eyes can be fastened by sewing a piece of cloth back of them on inside. This filling gives the head a soft elastic feeling when stepped upon, but I do not think it is as durable as the other way.

It is usual to double the ears down to prevent them from being broken, but I think it injures the effect. The skin should be lined with a heavy felt. Lay the skin upon it and with chalk mark it out just the size. Next cut two strips, usually two colors—a bright one $2\frac{1}{2}$ inches wide and a dark one say $3\frac{1}{2}$ inches wide—have them pinked, sew them to the skin all around the edge so that they will project. It should be gathered, using care to have it even, and finally sew the skin thus trimmed to the lining. The tail hangs free.

A very nice effect is obtained by plaiting the trimming, but it must be nicely done. Blue and drab for fox, maroon for wolf and deer are favorite colors. In large skins some prefer not to have them trimmed, in which case the lining does not show.



Nesting of the Mississippi Kite in Texas.

BY J. A. SINGLEY, GIDDINGS, LEE COUNTY, TEXAS.

The article on the "Nesting of the Mississippi Kite," (*Ictinia subærulea*), published in THE ORNITHOLOGIST AND OÖLOGIST for September, (Vol. XI, p, 142,) prompts me to relate my experiences regarding the nidification of this species.

On May 22d, 1886, one of my collectors brought me a set of two Hawk's eggs, which differed so much from any that I had heretofore seen that I at once questioned him closely concerning them, and elicited the following details from him:

He had found the nest on the 18th of May—the birds being there but the nest empty. He again visited the nest on the 20th and found one egg. On the 21st he again went there, and this time there were two eggs. On the 22d of May he found the Kite sitting on the two eggs, and, concluding that the set was complete, he took them and brought them to me the same day.

On questioning him as to the color, etc., of the bird he told me it was "blue all over but the head, which is white, and some white on the wings." Consulting my *Key* I was almost positive that I had a set of eggs of the Mississippi Kite, only the eggs did not answer the description. I questioned him still further but could gain no new facts, except that the hawk was known by the local name of "Blue Darter"—so called probably from its habit of swooping from mid-air upon its prey—a habit shared by the Swallow-tailed Kite, (*Elanoides forficatus*), also.

I sent the young man away with the promise of a handsome reward if he would bring me the parents of the eggs. I then waited patiently until June 5th, when, not hearing from him, I went to his home, and had him show me the nest where he found the eggs. A five minutes' walk took us to a tank in his father's pasture, and there, in a small post oak, I saw the nest. It was in the small forks of the tree, near the top, and about thirty-five feet from the ground. I easily ascended the tree and investigated the composition of the nest. It was made of sticks, large and small, and weed stems; the latter, with the smaller sticks, being in the inner part of the structure. For lining the birds had taken a lot of green willow twigs in leaf, and some of these were from ten to twelve inches in length. They were arranged nicely in the bottom of the nest. Willow trees grew around the tank, and from these the twigs had been obtained.

I had no measure with me, but I estimated the outer diameter of the nest to be thirteen inches,

and the depth seven inches. On the inside it resembled the familiar "platform" of the Heron family—the depression being hardly noticeable.

I spent the morning in the vicinity, and before noon I was rewarded by seeing one of the Kites coming towards the tank, circling in the air several times, and gradually nearing the water, into which he plunged—immersing half its body, but keeping its wings in motion and rising out of the water after flying about ten feet. It repeated this manoeuvre several times, and, in my endeavors to get within shooting distance, it saw me and took its departure. I had seen it closely enough, however, to be positive that it was a Mississippi Kite.

On writing to one of my correspondents about this set of eggs, he cast doubt upon their identity, stating that the genuine eggs of the Mississippi Kite "were blotched with brown." As my eggs were of a bluish-white, unspotted, I decided to again make the attempt to secure one of the birds, and on July 2d I followed one of them from the same tank, and after a zig zag chase of over an hour's duration, I was so fortunate as to see the bird alight on what I had previously taken for an old Crow's nest. I went towards the nest but now the Kite did not fly off, and knowing that I could take it whenever I pleased, I climbed up the tree, counting on another set of eggs. Alas, however, the nest contained only one young Kite, covered with pinfeathers and patches of a dirty white down.

I examined the nest carefully, and under the moss and leaves with which the present occupant had filled it, I found the original lining of the old Crow's nest, composed of hog-hair.

There is no doubt in my mind that this was the same pair of birds which laid the set of eggs taken on May 22d, but whether the single egg (which had hatched into the young bird when I found the nest) was of the second laying, or whether it would have been added to the other two eggs found May 22d is an open question. I am inclined to think, however, that it was of the second laying. I shot the male bird before leaving the vicinity.

When the nest of the Mississippi Kite is approached they utter a note almost identical with that of the Swallow-tailed Kite, but, unlike that species, they do not fight the intruder.

The two eggs that I secured on May 22d differ very materially from the egg in Mr. F. H. Carpenter's cabinet, described in *THE ORNITHOLOGIST AND OOLOGIST* for September, 1886, (Vol. XI, p. 142). His is dirty white, marked at one end with large faded brown blotches, and smaller

and lighter spots. Mine are dull bluish (or greenish) white, and *unmarked*. No. 1 measures 1.65x1.40 inches and No. 2 1.63x1.34. No. 2 has one or two light brownish stains on it.

Having heard that the Messrs. Rachford, of Beaumont, Texas, had collected sets of eggs of the Mississippi Kite I wrote to them for descriptions of the eggs and quote from their reply:

"In reply to yours concerning the eggs of the Mississippi Kite, we will say that we have taken two sets (three eggs)—one set of two eggs last year (1885), and a set of one this year (1886), and the color was invariably white, with a very slight greenish tinge, and unmarked. The identity of ours is perfect, and we shot the old bird at the nest as she came off."

I would also call attention to the egg of this species found by Mr. N. S. Goss, in Kansas, and described by him in *The Auk* for January, 1885, (Vol. II, p. 21). The birds were found nesting in "an old Crow's nest, fitted up with a few extra sticks, and green twigs in leaf for lining." On July 5th, he says, there was in this nest "one egg in an advanced state of incubation, but with care I was able to save it. Color, pure white; measurements, 1.70x1.35."

Now as the egg in Mr. Carpenter's collection is so well authenticated, I think I can explain the discrepancy between it and the ones found by Mr. Goss, Messrs. Rachford and myself. It is a well known fact that many species of birds that lay eggs normally unspotted now and then vary from their type, and occasionally present us with sets more or less blotched or spotted with light or darker colors. I do not need to cite instances of this as they are too well known. May not this be a case in point? The eggs taken by Mr. Goss, Messrs. Rachford and myself being typical ones of the species, while Mr. Carpenter's is the variation?

In conclusion I would say that I have made many inquiries among the boys in this locality, and have only heard of two other nests of the "Blue Darter" having been found here. One of these contained two "white eggs," and the other two young birds. I know myself that the bird is rare here, as the pair whose eggs were taken on May 22d, and three other birds (an adult and two young) that I saw one day when riding to Giddings, are the only ones I have ever seen in this locality.

The set of two eggs collected May 22d are now in the cabinet of a gentleman in Philadelphia.

[Mr. F. H. Carpenter informs me that the egg taken from the female bird shot by his uncle, the late Mr. G. H. Carpenter, in 1867, (see *ORNITHOLOGIST AND OOLOGIST* for September, 1886, Vol.

XI, p. 142,) was "faint bluish-white," and "unmarked." This fact was written down at the time by Mr. G. H. Carpenter, and is found among his notes. This egg could not be preserved as it broken by the shot. The remaining egg (which was preserved) is the one described on p. 142, Vol. X of this magazine. This variation between the two eggs, which undoubtedly would have formed one set had the bird had time to lay the second one, adds weight to Mr. Singley's theory as to the marked egg being a variation of the true type of those of *Ictinia subcærulea*.—*J. P. N.*

The Western Gull in Captivity.

BY HARRY R. TAYLOR, ALAMEDA, CAL.

I wish to give an account of two odd pets which I secured on a recent collecting trip to the Farallone Islands, twenty-three miles from San Francisco Bay. They are two young Western Gulls (*Larus occidentalis*), now (August 9, 1886,) only about six weeks old, and the most comically interesting of all the pet birds or animals I ever owned. I secured them when quite young, and their growth since then has been something extraordinary. They are quite tame, and they run up to me when I approach them, in a really dangerous looking manner, with their great hungry-looking mouths stretched wide open; but their intentions are harmless; they are only hungry, and until I can satisfy their voracious appetites they continue to upbraid me unceasingly, with loud squawking cries which prove very appalling to all the other fowl in the yard. The cormorant has a wide-spread reputation for enormous voracity, but after watching these two young gulls devour piece after piece of raw beef with an appetite almost insatiable, I have arrived at the conclusion that for immensity of capacity and appetite the cormorant has a powerful rival in the gull. The natural food of these young gulls is small fish, which the parents carry to the nest, but in confinement I am told they will live on almost anything which is given to them. I have pampered the taste of the two birds in my possession, however, until they enjoy nothing but raw fresh meat. Their alimentary canal seems proof against almost anything, for one of them the other day, swallowed a large piece of cup handle which lay in the yard, with no apparent inconvenience. They seem quite fond of fresh water, and when they have swallowed all the meat possible, they want a pan of water immediately, and dip their big bills into the sand in a very amusing way to show that they are thirsty and want the water at once.

I have no large place for them to swim in, but they delight to stand and wash themselves in a large pan filled with fresh water. The birds are very quick to catch pieces of meat thrown them, no matter what the distance may be, and fight over any piece which chances to fall to the ground. I notice that they begin to exercise their wings very much of late, performing a sort of flying dance around among the astonished hens, rising about three feet above the ground, and as I have seen them holding animated conferences they may be meditating escape. I shall have to clip their long wings so as to avoid the possibility of their sudden flight to join their friends and relatives on the Farallones.

The gull is a very intelligent bird and knows his friends and his enemies well. When I first placed this pair among the chickens they were the pitiful victims of a great deal of abuse from all the old hens of the poultry yard, who took advantage of their tender age and unprotected condition to abuse them terribly; but now the tables are turned, and woe betide the imprudent hen which dares to come near these haughty young natives of the Pacific Ocean.

I hope to keep the two birds to observe the change of plumage as they approach the age of the adult, in which case I seriously think it advisable that I purchase a meat shop—just for the sake of economy!

The Swallows Have Come.

WRITTEN FOR THE ORNITHOLOGIST AND OÖLOGIST.

The swallows have come and spring is here,
No more the winds blow cold and drear;
We see the graceful forms of light
Glance through the fields and gardens bright.
Welcome, spring and birds and flowers,
Welcome, fitful, freshening showers,
Welcome, coming happy hours;
Oh joy, the swallows have come.

The swallows have come, again we see
The dainty migrants wild and free,
Fresh from the sunny, southern clime
They come to pass the summer time.
Welcome, busy creatures, fair,
Welcome, perfumed balmy air,
Welcome, my rustic garden chair;
The swallows, the swallows have come.

Around the barn and eaves they fly,
Or skim the pool and cleave the sky;
With twitterings of love and peace,
Their mates in sweeping curves they chase.
Welcome, are your notes to me,
Welcome, your gambols wild and free,
Welcome, your gay society.
Welcome when'er you come.

MORRIS GIBBS.

ENTOMOLOGY.

WRIGHT & BATES,
265 No. Beacon St., Brighton, Mass.,

ASSOCIATE EDITORS.

Address all communications for this department as above.

Samia Columbia. Sm.

ROBT. H. WOLCOTT, GRAND RAPIDS, MICH.

Of this rather rare moth, first described by S. J. Smith in 1863, (Proc. Boston Society Natural History, Vol. IX, p. 343,) I am fortunate in possessing three examples, all males. The first, taken in 1883, is in very poor condition; the second, obtained by exchange, was collected, I believe, around a *S. Cecropia* in 1885, and the third, a fine specimen, fresh from the chrysalis, was captured this spring.

The expanse of wing is, in the first and third, four and one-quarter inches, and in the other three and seven-eighths inches, the species being usually much smaller than *Cecropia*, to which it bears much resemblance. It differs from that species also in being, from the absence of red, of a much darker hue, and in having the red and white band which crosses the wings of *Cecropia* represented by a faint, whitish, irregular line. For the identification of my specimens I am indebted to Mr. Henry Edwards, who writes that they are, without doubt, the above species.

Of the other species of *Attaci* found here, *C. angulifera* is very rare, *A. luna* less so, while *S. cecropia*, *A. polyphemus* and *C. promethea* are very common. I was much interested in the observations on the deposition of eggs, and on other habits of Lepidoptera in the last number, and quite agree with your correspondent, though the same day that I read the article several young larvæ of *M. quinquemaculata* were found on the ground cherry (physalis), and on several plants, apparently not large enough to support one, were three or four of the worms.

Larval Habits of Beetles.

BY L. E. HOOD.

It is a very important and interesting part of entomological science to study and trace the transformations of an insect.

This is comparatively easy with the Lepidoptera, and most species are known in all their changes, but owing to the difficulty of obtaining and keeping the majority of the Coleopterous Larvæ, but little has been done in this order.

There are four stages in the life of a beetle;

first, the egg which is deposited in or on the substance which will form the food of the larvæ, by the adult insect. The eggs are small, usually of a dark cream color, and slightly oblong and cylindrical, the larvæ hatch in a short time and are usually voracious feeders, growing fast, and most of them molt several times before reaching their full size. After reaching their full age, the larvæ form an imperfect cocoon and pass into the third state of their existence, and are called pupæ.

As a rule, this change takes place in the autumn, and by spring the adult or imago breaks from the pupal skin and the transformation of the beetle is complete.

The larvæ vary much in size and shape, as well as in habits. The larvæ of the *Cicindelide* being horrid-looking things, and like the *Curabide* are rapacious and live in the ground; the *Scarabæide* are the true grubs, being large, six-footed, but practically motionless, light-colored worms, that are very injurious to grain and grass, as they feed upon the roots and stems under ground.

Almost like these in shape, but footless, are the larvæ of the Weevils that infest fruit and nuts. Many larvæ are found in or upon the food of the adult, and the scavenger beetles are found in all stages, upon decaying matters; the *Silphide* burying dead snakes, birds and small animals in order to furnish food for their young.

Differing in every respect from the last, except in being injurious, are the larvæ of the *Elateride*, which are long, hard-bodied, brownish, wire-like worms. Many are wood borers, and among these are the *Buprestide*, which as adults resemble the *Elateride*, but wholly differ in the larval state, being large-headed and soft-bodied. Along the muddy banks of rivers and ponds will be found the larvæ of the *Dytiscide*, *Gyrinide* and other water-loving beetles.

The larvæ of the *Gyrinide*, are curious-looking, having a pair of breathing tubes on each segment of their bodies, which gives them the appearance of being water centipedes.

All the aquatic larvæ are armed with strong jaws and live on other water insects.

Other larvæ are found under stones, in fungus, on flowers and the foliage of trees, everywhere, even as parasites, and in the nests of ants, and in our own natural history collections.

I fully realize how difficult it is to find and keep *Coleopterous* larvæ, yet I would urge the young entomologist to devote some time to this study, and though you may not be successful at first, patience and care will enable you to do much good, and in the end your trouble will be well repaid.

Keep, if possible, all the larvæ you find; if you succeed in raising them you can easily determine the species. Be sure and keep all pupæ.

A note book should be kept, and if convenient figure all the larvæ and note down all changes, food habits and characteristics of your specimens.

The following table, though very incomplete, may be of interest to those who may wish to collect our *Coleopterous* larvæ.

For convenience I have classed the families according to their food habits, and at best such a brief list will be imperfect, as different genera in a family may have very different habits. The *Scarabæide* will furnish a good example.

In this list I first have the larvæ that live wholly in the ground, and these are divided into carnivorous and vegetable feeders. Next comes the water larvæ, then the scavengers; the plant larvæ, which include all that are found on plants, the foliage of trees, in fungus, etc.; then the wood larvæ, which include those that bore in fruit and forest trees, under bark, in decaying logs and stumps; then the seed larvæ, such as the Weevils, Gall-making larvæ, etc.; last of all the parasitic larvæ, or those that infest bees' nests, our museum collections, carpets and woollens, etc.

Ground Larvæ, (Carnivorous).—*Cicindelide*, (Tiger Beetles), *Carabide*, *Nitidulide*, *Colydide*, *Staphylinide*, *Lampyride*.

Ground Larvæ (Vegetable Feeders).—*Scarabæide*, except the genera noted under "Scavenger larvæ," *Elateride*, (wire worms).

Water Larvæ.—*Dytiscide*, *Gyrinide*, *Hydrophilide*, *Parnide*, *Dasyllide*.

Scavenger Larvæ.—*Scarabæide*—The following genera are found in decaying matter, etc.: *Copris*, *Onthophagus*, *Phanarus*, *Geotrupes*, *Aphodius*, *Trox*, *Silphus*, *Histeride*.

Plant Larvæ.—*Coccinellide*, *Mordellide*, *Trichopterygide*, *Erotylide* (fungus), *Trogositide*, *Chrysomelide*.

Wood Larvæ.—*Rhyssodide*, *Cucujide* (also in grain), *Lucanide*, *Plinide*, *Sculytide*, *Buprestide*, *Rhizophagide*, *Cerambycide*, *Pyrochroidide*.

Seed Larvæ.—*Bruchide* (Bean and Pea Weevils, etc.), *Curculionide*.

Parasitic Larvæ.—*Dermestide*, *Cleride* (On bees), *Meloidide*, *Stylopide*.

Conversation Between Beetles.

BY WALTER HONIE.

I was watching some Dung Beetles the other day, on the Hunting Island. Several of them were rolling their pellets along, when one fell with his load into a deer track. After several un-

availing efforts he stood at the edge and apparently did a little thinking. This was the position of affairs: The pellet lay near the toe of the track, which was deeper than the heel, but the deer, as is frequently the case, had dragged his toe in walking and made a light furrow.

The beetle started nimbly off and joined one of the others whom he assisted in rolling his burden for a foot or more, until they were close to the scene of the accident. Both now left their charge and stood by the edge of the track, where a regular consultation plainly took place. Each in turn went below and the pellet was moved to either end of the track, but could not be lifted out. While both were below engaged at this futile task, another one came along and apparently said something, for at once all three began deepening the little furrow where the deer had dragged his toe. The new comer pushed the loose earth down to the two below, who worked it backward. When a regular incline had been formed, he ceased his work and stood one side, while the other two extricated their precious charge without any further mishap. I fancied, too, that when it was in safety, its owner made a sort of "thank you, sir," movement towards his two friends.

A Hardy Butterfly.

BY PAUL REVERE.

One of the most pleasing entomological studies for an amateur is the rearing of the Archippus Butterfly (*Danaus archippus* of *Fabricius*), found upon milk weed from the middle of July to autumn. The fly is represented by a handsomely banded caterpillar, with two thread-like horns at either end of its body. Its chrysalis is light green, decorated with black lines and spots of gold, and suspended, resembles a pretty ear-drop. It is translucent, and each day the changes of the occupant may be noted, until the red and black markings of the wings become visible through the membrane which encloses it. Its egress is prompt and its preparation for flight rapid, the time occupied in leaving the chrysalis and developing its wings, is from thirty minutes to an hour, while a moth of equal size would hardly be ready for flight in twelve hours.

In July, I collected a dozen, and after they had reached the chrysalis state, I made a wire screen cover to a box, suspended them from it and placed them in the refrigerator. They were all put in the refrigerator between the 20th and 31st of the month. My intention was to hold them in check and take them through the winter to be

hatched in the spring of 1887. They were kept in the refrigerator until Sept. 7th, a period of six weeks, when, to my astonishment they began to emerge, and I found half a dozen out in the box.

I do not know the degree of cold to which they were subjected, but I am satisfied that the atmosphere of the refrigerator was never above 45°, while it must have been as low as 34° at times. The box they were in was pasteboard, and open at the top.

This result satisfies me that *Danaus archippus*, with a supply of food plants can range within the arctic regions and flourish at as high a point as civilization has ever reached—Upernavik,—where the summer heat sometimes reaches 60°, although in that latitude such heat as that is considered phenomenal, between 45° and 50° being the average summer temperature.

What the minimum of heat is, which is necessary to mature this butterfly I do not know, but I have not a doubt that it would develop in the chrysalis and emerge under a steady temperature of 42°. The maximum of its endurance of cold is not known, but in this latitude it is sometimes subjected to a temperature 30° below zero, although the average winter temperature is about zero.

The Archippus butterfly must be among the hardiest of New England Lepidoptera and rank with the Graptas and Vanessa for its endurance.

Sphingidae of New England.

BY WRIGHT & BATES.

SPHINX CAROLINA.—Linn.

Head, thorax and abdomen dark gray with a brownish tint; a black line extends around the front and sides of the thorax, which is surmounted by a triangular patch of lighter color, bordered with black.

On each side of the abdomen is a row of five bright orange spots, encircled by black, decreasing in size toward the apex. There is a faint black dorsal line, and the segments are faintly edged with white.

Anterior dark brownish-gray, with a white spot at the base; four irregular lines cross the wing between the base and the disc, inclined posteriorly toward the base; discal spot white, edged with black; beyond the disc is a faint dark-brown curved band expanding into a patch below the disc; the space following this patch is light-brown; a black wavy line extends along the outer margin, followed by an irregular whitish line which becomes obsolete toward the apex; a black line, shaded anteriorly with very light-

gray, extends from the apex toward the disc; fringes brownish-gray, dotted with white.

Posteriors light-gray, with a light-brown basal spot, followed by three light-brown bands crossing the wing, marginal space light-gray, with a light-brown band extending from the apex, where it unites with the last band along the margin, to about the centre of the marginal space.

Under side of anterior dark-gray, crossed by two parallel lines just beyond the disc.

Posteriors are of a lighter shade than the anterior and are crossed diagonally, near the middle, by three lines, which are followed by a band of a darker shade.

The under side of the abdomen shows a row of four black ventral spots.

Mature larva green, with seven oblique white stripes on either side, bordered with bluish; minute white dots, edged with a purplish shade, are scattered over the body, and the last segment is edged with white; caudal horn is curved backwards and is furnished with short black spines.

Pupa dark-brown, with a detached tongue case. Transformation subterranean.

Food plants: Tobacco, tomato and *Datura stramonium*.

We hope our readers and correspondents will kindly overlook the many errors which crept into our department in the last number. Our assistant undertook to correct the proofs, and following the example of many entomologists, changed a number of names. Still, as we prefer the old ones, they may be found under the head of "Errata."

ERRATA.

Page 159, first column, twenty-sixth line, for *Citheronia regalis* read *Citherona regalis*.

Second column, sixteenth line, for *Ogrion ep* read *Agrion Sp.*

Same column, twenty-ninth line, for *Grilus* read *Gryllus*.

Same column, fortieth line, for *titilus* read *Dynastes*.

Same column, forty-third line, for *Scorabæidæ* read *Searabæidæ*.

Same column, forty-sixth line, for *Iptera* read *Diptera*, and for *Tabanid* read *Tabanus*.

Same column, fiftieth line, for *Celias* read *Colias*.

Page 160, fifth line, for *Bonbycid* read *Bombycid*.

Rare Birds.

Mr. Charles E. Hoyle of Millbury, shot, on Saturday, at a pond in Oxford, two of the rare Golden Plover out of a small flock that had been frequenting the pond for several days. These birds, so eagerly sought after by gunners along the coast during their flights southward in the fall, are extremely rare so far inland. They were undoubtedly driven in by the northeast storm of last week.

A young Goshawk was captured in a house in Worcester, Monday, having entered the room through an open window. —J. M. Wade.

CORRESPONDENCE.

Amateur and A. O. U.

MR. EDITOR.—It seems to me that your correspondent, Mr. Chamberlain, has fairly boiled over with virtuous indignation, and in so doing has *run a muck*. That the O. and O. has become a vehicle for injustice because it sympathizes with those who have opinions as *their own*, and through its columns admits their expressions, even if they vary from those of the Grand Moguls, is certainly a compliment to you, rather than a serious charge. That the gentleman is an amateur is very *marked* and we are delighted to find him, being such, a member of the A. O. U., as we are to know also that other members of the same order are *Taxidermists*, and we are not so unfair as to believe it will cause them to lose caste.

That the pursuits of amateur naturalists have come under a ban to a considerable extent (in the east) from the results of the action of the A. O. U., I believe to be true; perhaps not intentionally. It is easy to start a rolling stone, but quite another thing to guide it.

"The committee on bird protection instead of ignoring the rights of the amateur have placed them on the same footing as the professional scientists." Quite proper. Does the gentleman think it would have been wise to have taken any other course, and will he inform us at what age the committee recommend an amateur should arrive at to be eligible to the permit system? If I mistake not this last question is quite important to a large number. Also, what assistance have collectors, except in isolated cases been afforded.

I don't quite understand the point about stretching the meaning "the interests of science." The New York law which was recently passed, and we think was somewhat brought about by the influence of the body, appears to have had its *meaning well stretched*, and we are certainly very grateful for the suggestions from them that brought into effect the present law in Massachusetts—whereby they *advise no one under sixteen can have a permit and no one over can obtain one* (practically.)

The gentleman as a clincher to his illustrations of magnanimity, says a member of the A. O. U. offered to *assist a taxidermist* to procure a permit, "even one whose advertisement was *scarcely consistent with science*." Does not this point savor just a little of what we complain? To the member who offered his assistance, it is a compliment, but to one who would question the honor of the recipient it may not be. Permits, the gentleman must be aware of, are grants to collect under restrictions—which the holder is by honor bound to observe.

Did the taxidermist's advertisement show a lack of honor or responsibility?

I believe Mr. Editor I represent a larger number than the A. O. U. when I say we demand that there shall be no *discrimination in granting permits*. When the grant is infirmed upon, then is the time to shut down.

The question has been asked "where do you draw the line between the amateur and the scientist?" If Mr. Chamberlain comes forward and claims to be one, and as such thinks that he has a better right to represent them than you, Mr. Editor, then I feel assured the question will never be answered.

The saddest part of all is the reference to amateurs who never heard of the *Auk*! Science, have mercy on the amateur who hears not of the *Auk*, and common sense, on both amateur and scientist who do not take the O. and O. —*Massachusetts Taxidermist*.

Bird Destruction.

EDITOR ORNITHOLOGIST AND OÖLOGIST.—Sir; I have taken much pleasure in reading the interesting articles on Destruction of Birds. Every week I devote one day, or a part of one, to the birds. As I am living in the country, in a good position for observing, scarcely a day passes but what I can make some note of our feathered friends. I am fully satisfied that, around this locality, the Catbirds and Cowbirds do more toward the extermination of many small birds than all the men, boys and cats.

Several years ago my attention was called to the large number of Chipping Sparrow's nests that were empty and overturned. For every nest with young of this kind, I find the average is a little more than ten that have been despoiled. This is the work of Catbirds, for I have seen them robbing the nests many times.

The Wood Thrush, Red-eyed and Warbling Vireos also suffer greatly from the depredations of this arch fiend. We all know the parasitic habits of the Cowbird. The birds nesting here in whose nests they deposit their eggs, are Indigo Bunting, Grass and Purple Finches, Song Sparrow, Golden-crowned Thrush, Vireos, Warblers, Least Flycatcher, Pewee—especially when the nest is in the woods. In the last New York quotations for game Blackbirds are offered for 15c to 20c per dozen, and Reed-birds or Bobolinks at \$1 per dozen. A year ago last spring, when I was in Warrington, Fla., I saw large numbers of Robins and Cedar birds killed for food. The hunters seemed to consider them legitimate game, and found a ready sale for them with the officers at the Fort and Navy Yard. During the winter and early spring these birds are in large flocks, and very often a dozen are killed by one or two shots.

It will be well for amateur collectors in this state, (of course the scientist will not be troubled) to look up the new game laws which were passed in May by our imbecile Legislature. Sections 4 and 5 of these laws were probably framed by some escaped lunatic.

Last year a Robin's nest containing eggs was brought to me by one of my cousins. He found it in his hop yard, in a slight depression of the ground and about a foot from a hop pole. This spring my attention was called to another Robin's nest, with eggs, on the ground at the foot of a small apple tree. I have heard of two others on the ground this year, but did not see them.—D. D. Stone.

Mr. H. R. Taylor, Alameda, Cal., desires us to state that he will be unable to consider any further exchanges this season.

CORRECTION.—October issue of O. and O., page 146, second column, 20th line from foot of page, "Summer and winter" should read "summer visitor."

In Mr. Thomas H. Jackson's interesting and valuable article on the Worm-eating Warbler, (*Helminthotherus vermicivorus*), in the October number of THE ORNITHOLOGIST AND OÖLOGIST, a vexatious typographical error occurred in the last line of his paper; where he is made to say "the usual nest complement is *four* eggs," whereas it should read: "the usual nest complement is *five* eggs."

It should also be stated that in recording the measurements of this species Mr. Jackson gave the *width* first in every instance, and then the *length*.

The following contributors will please accept our acknowledgements for articles received: Harry G. Parker, J. W. Preston, N. S. Goss, Henry Hules, T. D. Perry, Walter Hoxie, R. F. Stevens, C. H. Price.

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The Ornithologist and Oologist.

Volume XII.,

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BOSTON, MASS., DECEMBER, 1886.

No. 12.

Some Ornithological Explorations in the Dead River Region of Maine.

BY F. H. CARPENTER.

(Concluded from Page 163.)

77. *Asio americanus*, (American Long-eared Owl). This Owl was quite common in September, and several were shot by the visiting fishermen at Seven Ponds. These were found roosting in the hemlocks around the lakes, and apparently, were oblivious of any intrusion until the report of the gun sounded their death knell. When trout-fishing after sunset I have often seen Owls, presumably of this species, fly over the surface of the lakes at no great height from the water. As my visits to this region were not made during the breeding season of the *Raptores* of this country, I regret I can not give any account of the nesting of this species.

78. *Strix nebulosa*, (Barred Owl). Common about Kingfield, where it often resorts to barns during the day time, and has thus earned the soubriquet of "Barn Owl." It was also heard about New Portland and at various parts of the southern part of Somerset county. Mr. Freeborn has a pair near Farmington, from which he has taken two sets annually for the past four years. The nest is in a cavity in a decayed oak stub, about fifteen feet from the ground.

79. *Nyctale acadica*, (Saw-whet Owl). In late autumn this little Owl is quite frequently observed by the crews at the logging camps. While I have enjoyed considerable acquaintance with this species in other portions of Maine, my record for this region is very brief but very satisfactory when viewed from a collector's standpoint. On the morning of Jan. 7th I went into the grain shed of the camp and there saw sitting closely together on a joist, three Owls of this species. They are now lying side by side in the same camphor scented drawer. From that date I made it a regular duty to pay a morning visit to the grain shed, but save for a little band of Chickadees it remained tenantless.

80. *Scops asio*, (Screech Owl). A solitary individual of this species, amused himself by his tremulous cry near the hostelry at Kingfield. Mr. Freeborn has a set of their eggs taken "from a decayed apple tree in New Vineyard." None of these birds were seen or heard in the dense ever-green forests.

81. *Bubo virginianus*, (Great Horned Owl). The most common Owl of the forests, where it occurred commonly at all seasons. Its hootings were heard every night in June, while in the woods, and several specimens were secured, one of which was in exceedingly light plumage, almost savoring of albinism. These Owls would come about the camps in search of food, being attracted by the grouse, fish, etc., which we would suspend from some convenient sapling, and many a contemplated breakfast was spoiled ere we were aware of the nature of our thieving midnight visitors. Their raids on the poultry were of a serious nature, and they were an especial object of hatred to the farmers. The nesting of this Owl in the Maine forests has several times come under my observation. All nests were built by the birds and placed at a great height in the spruce trees, and near the edge of the forests, not in the interior as theorists would suppose. I have never found an excess of two eggs in any set.

82. *Nyctea scandiaca*, (Snowy Owl). These Owls are reported as being frequently seen in winter near Kingfield. I have one instance on record; a specimen taken at Stratton, December 18, 1884, by N. G. Frink.

83. *Esalon columbarius*, (Pigeon Hawk). A specimen of this bird was taken at Kingfield in September. I am of the opinion they breed on Mt. Abraham and hope to substantiate the supposition by investigations in the proper season.

84. *Pandion haliaetus carolinensis*, (Osprey). A single individual of this species remained at Tim Pond for about three weeks in August, 1885. This was the only record of the entire region.

85. *Accipiter fuscus*, (Sharp-shinned Hawk). Several of this species were seen in the Dead

River valley, and two were secured, one, a female taken June 10th, bore marks of recent oviposition. No nests were found.

86. *Astur atricapillus*, (Goshawk). I am positive. I saw several of this species in June, but could obtain no specimens. In September one was secured at Flagstaff Lake and another given me by the farmer who shot it. Both were in immature plumage.

87. *Buteo borealis*, (Red-tailed Hawk). A specimen in full plumage secured at Eustis in June and another in September. By no means a rare bird. Several were seen sitting on the dead stubs left standing in the clearings, or flying in slow circles over the pastures. They nested near Stratton, as I was shown several end-blown eggs of this "Hen Hawk" as the result of sundry hawking expeditions by a farmer's boy in early May.

88. *Buteo lineatus*, (Red-shouldered Hawk). Occurring in the vicinity of Farmington and Strong in considerable numbers. This species did not frequent the sections in which the Red-tailed Hawk occurred, in such numbers as elsewhere. I was shown several sets of their eggs collected in the vicinity of Kingfield.

89. *Buteo pennsylvanicus*, (Broad-winged Hawk). Several individuals of this variety were seen in the vicinity of Flagstaff and a specimen was secured. I could learn no particulars of the nesting in the county, though they undoubtedly breed, as I have seen the species at every visit to the region excepting winter.

90. *Archibuteo lagopus sancti-johannis*, (Rough-legged Hawk). A mounted specimen in my collection from Spencer stream district, authenticates the only instance I can record of its observance in the county.

91. *Canace canadensis*, (Canada Grouse). This Grouse was found commonly in the entire north-western portion of Somerset county. A few were seen at Eustis and Flagstaff, and in nearly all the middle sections of the county they were to be met with, with the exception of the vicinity of Tim Pond, which locality, by some peculiar reason, was very sparingly occupied by certain birds, as my summer bird list of the vicinity of the lake, given in February ORNITHOLOGIST AND OÖLOGIST of the present year, will show.

92. *Bonasa umbellus*, (Ruffed Grouse). This species was very common about Tim and Seven Ponds, and equally indifferent to the presence of man as the preceding. My friend W. G. of Springfield, Mass., attempted to hook one by the under mandible, from a flock sitting on a log by the camp spring. Reeling up his line until but five

inches of leader hung from the tip of his rod, he guided the barb under the beak of the wondering Grouse and struck in approved Waltonian style. His dainty nine ounce rod might be sufficient to bring to creel the finny trout, but not to bag the feathered Grouse. A whirr of wings and clicking of reel followed the strike and the valiant fisherman found himself "out" of three feet of "mist-colored" leader and a Scarlet Ibis fly, while his \$25 "hexagonal" would not have brought as many cents at a Boston "uncle's" office. Friend G. now hunts Maine grouse with his 12-bore Parker.

93. *Ardea herodias*, (Great Blue Heron). Occasionally seen at the various lakelets of the region in August and September. No knowledge could be obtained of its breeding.

94. *Botaurus lentiginosus*, (American Bittern.) This bird was frequently heard in a marsh near Flagstaff Lake, where I think it nested. They were not observed in any other section.

95. *Tringoides maculdrus*, (Spotted Sandpiper). A number of these birds seen in August and September; almost every stream or pond was tenanted by a few of these little waders. None were seen in the country in June.

96. *Totanus melanoleucus*, (Greater Yellow-legs). A specimen was shot by a local hunter at Flagstaff Lake in September, 1885. The only instance of observance.

97. *Anas obscura*, (Black Mallard). Common in the numerous ponds of the region in September, when they afford good shooting. Several broods of flappers were seen in June along the Dead River, and several farmers informed me of the finding of the nests and eggs of this species, and their subsequent attempts at hatching and rearing the juveniles.

98. *Nettion carolinensis*, (Green-winged Teal). A few were seen at Flagstaff in September and three were shot by a hunter who gave them to me. They were seen at no other place, yet they occur at times in considerable numbers at the above lake, as many of the settlers informed me.

99. *Aix sponsa*, (Wood Duck). These Ducks were common on Dead river and Spencer stream, where they nested in the hollow stubs on the banks. I saw many old nesting sites and young broods in June. They were frequently seen sitting on logs in small flocks of three or four, when canoeing on the streams.

100. *Mergus merganser americanus*, (Sheldrake). Seen at Flagstaff Lake and Seven Ponds in September; at the latter place they were quite common and were seen flying from one lake to another.

101. *Podilymbus podiceps*, (Pied-bill Grebe). Numbers were seen at the ponds and lakes of the valleys. Too much time is wasted in pursuit of these little divers to allow extended observation, as they are common at any Duck shooting resort in Massachusetts, but I am confident I saw the Horned Grebe, (*Dytes auritus*), at Flagstaff, but cannot record it.

102. *Colymbus torquatus*, (Loon). Nearly every lake in this country was occupied by one or more of these birds. I received sufficient evidence of their breeding at Flagstaff Lake and Big Island Lake, one of the Seven Ponds.

At the mention of this bird there comes a memory of reposing on fragrant hemlock "savin" in the *quaint* companionship of my guide, and with the weird midnight cry of the Loon it resolves itself into an ideal; the shadows of the Dead River region of Maine.

Notes on Some Birds of the Great Smoky Mountains.

BY ARTHUR LEMOYNE, M. D.

(Continued from page 164.)

HELMINTHOPHILA CHRYSOPTERA.

Golden-winged Warbler.

This rather locally distributed species was quite common in Monroe county, where it was found in the hardwood growth at varying altitudes. In Blount county also, several individuals of this species were noticed, and in Cooke and Roane counties scarcely any were noted the last spring, although the latter county, some four years ago, contained more of these birds than any other section. I failed to note their first arrival this past season. I have them recorded for first time on April 24th, as "seen in considerable numbers," and presume they arrived some days previous. During the first week after their arrival they seem to keep in company and may be found in the scrub growth in the high lands. The males open the mating season by displaying their vocal abilities from the highest point of vantage, though the choirster is often secluded from view. Their nesting, the second act in the drama, is begun about the middle of May and the eggs are deposited by the first of June. These last statements are rather general ones, but my own experience bears me out in this assertion. More definite and statistical records may be given; I have found uncompleted nests on May 26th, 29th and 30th, and full complements on May 28th and June 3d and 5th. The above are in six different nests of this species, the first can have no subsequent chapter added, as I left the locality where they were

found too soon to procure the eggs. The nests of this warbler are placed on the ground, and for so dainty a bird are rather bulky and coarse in detail, though so nearly alike in composition as to admit of an easy selection of a typical structure, a description of which will serve for all. A nest before me has just been inspected by a Professor of Botany, and I avail myself of the opportunity and present its description. The outside of the nest was large beach and oak leaves, followed by a layer of the fine strips of bark of the grape vine. This was followed by a lining of grasses and slender fibres of some coarse weed. The inner lining was of horse hair and very compactly *woven* into its place, so as to admit of being removed from the nest and still preserving its shape. It resembled very much the nest of the Maryland Yellow-throat, but can be distinguished by the compactness of the inside lining. The eggs from the above nest were taken June 3d, '86, and were perfectly fresh on that date. The set numbered four and in coloration were pure, almost glossy white, with bright brown spots at the larger end, which had a tendency to form a wreath around the egg, and would have accomplished, had there been enough of the spots.

CERTHIA FAMILIARIS AMERICANA.

Brown Creeper.

This quaint little bird was found in the evergreens on the mountains, in preference to other localities, excepting during the winter months, when it may be met with in the valleys. Its habits are too well known to further enlarge upon in these columns, with one exception, its nidification, which has not been often published. Only once have I observed it nesting in these mountains. On May 15, 1885, I saw one of these birds fly to the trunk of a spruce, the top of which had been broken off, and the stub having lost its vitality had cast its bark, which was hanging loosely from it. The bird was quickly followed by his mate, which was carrying in her bill a few feathers. Marking the spot where she disappeared behind the rough bark I left her to perform her labors. In ten days I returned, and upon thumping the tree she flew from her nest. Cutting a "staddle," I mounted the trunk of the stub, until I could reach the rift behind which the nest was placed. The nest was a medley of lichens, *usnea*, moss, feathers, grass and a few rootlets, in which was placed five eggs, much resembling Chickadees, being a trifle smaller. Another set of six eggs brought me by a lad, were profusely spotted with bright brown spots. This set was, according to the statement of the finder, taken from a nest placed in a crevice in one of the logs of a fence.

PARUS ATRICAPILLUS.

Black-capped Chickadee.

This northern Chickadee I have always found in greater or less abundance in Blount county, and on Great Smoky Mountain. It keeps well to the higher altitudes in the mountains, from which, however, it descends in winter. This species also intermingles with *Parus carolinensis* in a somewhat restricted manner, at its lower range. I agree with Mr. Brewster regarding the slight difference to be detected between specimens taken in these mountains and those from New England. Their brighter colours are perceptible at the merest glance. Their nesting, which was observed but twice, was in no wise different from those of the Northern States.

PARUS CAROLINENSIS.

Carolina Chickadee.

This is the common Chickadee of this region, and is met with everywhere, from the valleys up to 4000 feet on the mountains, where it joins company with *P. atricapillus*, but its differing notes are at once distinguished from the former variety. It nests like all Chickadees, in cavities, but seldom excavates one, as will the Black-capped. They line their chosen hollow with rabbits hair and feathers, upon which they deposit their eggs, from five to seven in number, which resemble closely those of its northern relative, being on the whole a trifle larger and more evenly spotted.

(To be Continued.)

A Day on Edding Island.

BY WALTER HOXIE.

The 2d of October was our first cool, fall-like day. The sky, though overcast, did not promise rain and the wind was strong and gusty from the north. It was just the weather for sneaking about the ponds over on Edding, so I pocketed a few shells, Nos. 12, 8 and BB, and paddled over to Horse landing. As I moored my boat a cloud of Little Blue Herons—old and young—rose from the sand flats between me and the first ridge of pines, but all were too wary to come within reach. But a Clapper Rail was not so fortunate for she lost her head at about ten paces. Though useless as a specimen she was welcome as a lunch. So I made a short detour to an old stump where I always keep a stock of matches corked in a bottle, and having secured the means of making a fire I struck a blind trail through Parrot Ridge. This is a name which designates many localities hereabouts and was doubtless bestowed by the early settlers when the gaudy Parrakeets flocked in this region.

Beyond Parrot Ridge is a wide stretch of tall rushes, which is a favorite haunt of the Short-billed Marsh Wren. I found several of their nests to-day, and this fact leads me to remark that the deserted nests seem to be much easier to find than those which are occupied. I spent a good part of a day in this locality during the breeding season without finding a single nest, but to-day I found three nests without searching at all.

In Sheepshead Ridge I detected some Warblers. The thick palmetto and blackberry vines hindered me for some time and while crowding along after them I suddenly became aware that I was looking right into the eyes of a big buck. Only twelve in the gun, though, so the old fellow needn't have been in such a hurry to make off. I got my warbler, which proved to be a Red-poll. Crossing Cedar Cove I noticed quite a gathering of small birds in the tangled undergrowth on the other side. One Downy, two Red-bellied and two Pileated Woodpeckers. Carolina Tits and White-eyed Towhees, quite a party; a Brown-headed Nuthatch and Pine Creeping Warbler on the same limb, and the first Catbird of the season. Just by the edge of the first pond I caught the outline of a bird perched on a dead limb. The attitude and breast seemed to be hawk-like, so he came to grief, but to my chagrin turned out to be a Brown Thrush. Mistakes will happen.

A Black and White Creeper, the first of the season, was my next victim, and as I was placing him in the cone a huge expanse of black and white wings glanced past an opening in the oaks and I saw a Wood Ibis swerving downward in graceful flight toward the Flag Pond. The Wood Ibis is one of our common summer visitors and is locally well known under the name of Gaunett. Very few adults are seen, but this fellow looked to me like an "old stager," and I resolved to try and stalk him. So I deposited my hat at the foot of a big oak, charged both barrels with BB and waded cautiously out into the pond. Tall cat-tails and wild oats grew about all the little green pools, and a flock of Green-winged Teal paddled about in one of the deeper places. I was glad to see no alligators about, for they are company that I never desire, although large experience in their haunts has convinced me that they are quite harmless. My Gaunet was nowhere in sight, but as I paused and looked about me on a little muddy knoll, I saw by the numerous tracks and loose feathers that a large flock was about, and by a careful examination of their tracks I was convinced that they had risen from here and flown toward the lower end

of the pond. All the tracks ended in three or four long footsteps pointing in that direction, and I knew they must be standing on the other side of a wide bed of reeds, to reach which I must wade the deepest part of the pond. Cautiously I ventured in. Knee deep at first and very muddy—then waist deep and a harder bottom, growing gradually shallower till I was safely hidden in the reeds. Cautiously I forced my way through and as I caught a glimpse of the black water beyond I saw away off on the farther edge a group of a dozen or more of the great awkward birds I was seeking. But my heart went away down, for they were a good hundred yards from the edge of my cover. Still I thought I would get a little closer, and in about three steps more I was well rewarded for my trouble. For right beside me in a little opening in the reeds was the bulk of the flock, some forty or fifty in number. A little more careful sneaking and I was almost among them. I could have touched the nearest ones with my gun barrel. So I squatted right there in the mud and water and watched their antics and studied their uncouth positions, making mental notes for future reference in regard to "mounting." One young fellow close beside me plainly "felt a bite," for he raised one long parti-colored shank and scratched the back of his head with his toe, balancing himself in an unsteady fashion on the other limber pin. Having accomplished this feat to his own satisfaction, he made a most elaborate bow to his nearest neighbor and opening eight or ten inches of mouth, remarked "Kerwauk." With a somewhat less studied salutation, his friend replied, "K-wouk ker ka wow." Then a big old chap, bald-headed and austere in demeanor like myself and the emblem of our glorious republic, gave the youngsters an angry glance and remarking "Walk-walk," suited the action to the word and walked over to them and gave each in turn a sounding kick, which they deftly caught on half-spread wing and only replied by a deprecating series of bows. Bowing seems to be a regular accompaniment to the conversation of the Wood Ibis. Likewise the rule that "Little folks should be seen and not heard," is plainly a part of their code of manners, for every exchange of civilities among the young fry was visited by instant chastisement from the patriarchal toe.

At last my juicy seat became rather too much so for comfort, and with a mental "beg your pardon, sir," I collected the grave old patriarch. What a rush and beating of broad pinions followed the report of the gun! Seeing no intruder they kept circling close over the spot, and had I been so minded I could no doubt have collected a score or more. But one was enough for me, so I

made myself visible, shouldered my victim and started back.

Getting home, ("home is where the heart is,") I built a rousing fire and hung up my drenched garments to dry. Near by on some coals drawn away from the general mass, my Rail was soon browning to a turn. By the time I had finished my repast my clothes were sufficiently dry to be resumed. So I started on my return trip, by a different route, striking round the end of the island next the open marsh. The Sea-side Finches seemed extremely plenty about one little hummock, and it was an opportunity not to be neglected. I beat it up well and obtained four. They are in all sorts of plumage now, just the time to get specimens to finish out a series. At the landing I took a Sanderling with my last load of twelves, and in the creek I cracked both barrels at a Royal Tern. A beautiful specimen he proved to be, so light on the back as to be almost white, and with just suspicions of black on the occiput.

Nesting of the Swallow-tailed Kite in Becker County, Minnesota.

BY J. W. PRESTON, BAXTER, IOWA.

It was my good fortune to spend the collecting season of 1886 in the difficult, though by no means uninteresting region bordering on the head waters of the Red River of the North.

Here are many beautiful lakes, begirt with shaggy woods—a county abounding in fish and game—the delight of the angler and sportsman, and the joy of the summer tourist.

But should the ornithologist, and especially the oölogist, visit this country he will be disappointed unless he is content with much hard work, and few sets of eggs—although some of them may be very desirable.

In the northeastern portion, and extending far beyond, is a virgin wilderness of mingled lake and forest, where one may wander for days and not see a human habitation; and the only feathered friends to cheer his way will perhaps be an occasional Flycatcher with its smart *peet-peet*, or a lone Vireo. Perhaps a Barred Owl may peer down upon him out of some overhanging bough, or a frightened Broad-winged Hawk dart down from a dead tree-top to hide himself from view; while clear and long echoes the cry of the weather-wise Loon, as he flies swiftly from lake to lake.

Somewhere back from the shores of one of these lakes, where the rich flat land had sent up a heavy growth of basswood, elm and balsam, and the higher ground was covered with poplar, sugar

tree and birch, a pair of Swallow-tailed Kites, (*Elanoides forficatus*), had chosen a nesting place. For many days I had watched their graceful flight here and there, over woods and waters, sometimes in search of food, and again carelessly sailing and darting about almost out of sight against the clouds.

When late in May they began carrying material for a nest, I lost no time in the endeavor to find the location. By watching from my boat along the opposite shore, I could see them make frequent visits to a larch swamp at one end of the lake, from which they carried sticks a mile or more, keeping just among the tree tops. During the day they flew back and forth many times, but I failed to decide where they stopped, for they frequently let the burden fall, when they would fly about aimlessly.

The next morning I climbed a tall tree near where the previous day had been spent, and had a much better view than from the water. The sun was driving away the morning fog, which hung about the trees in light waves. Long shore lines of sand and yellow canes appeared in the distance, broken by bordering hills.

Soon a Kite passed over the trees with a long stick floating out behind, and after flying a mile or so it disappeared from view. Its mate had flown a short distance in advance and but little above, and now simply continued on its course. This was repeated time and time again until I was confident that I could go within forty rods of the tree which they were occupying, but, fearing that my presence might disturb them, I did not go for about a week. When I did return, many hours were spent in impatient watching ere a Kite was seen, and then it paused but an instant in its rapid flight past the spot where they had been before. In another hour it returned to pass swiftly away again.

As it was time for the bird to be sitting, and as the male was doubtless carrying food to its mate, I came to ground, rowed to the opposite shore, three-fourths of a mile distant, and went in the direction as near as possible to do where marshes and tangled windfalls intervened.

Choosing the upturned roots of a giant oak as a suitable hiding place, I concealed myself among some overhanging branches, and lay for four hours, being unable for all that time to catch sight or hearing of the Kites. Many pieces of larch sticks and long moss indicated, however, that the nest was near. Night came on, and I returned to camp.

The next day was hot and sultry, yet I remained from morning until sunset in the same

place of concealment, with no better results than before. It is not an easy matter to go to a point in heavy woods seen from a distant elevation.

However, the day following I climbed a very tall basswood tree half a mile nearer than the first, and was soon rewarded by seeing the bird go directly to the tree where the nest was. Then, with greater care, I approached the place and after a half hour the male bird came flying by me with some small object in his talons. He paused some fifteen rods beyond, and then darted out of sight. I therefore went nearer, the trees being so close together, and so densely leafy, that looking into their tops was a matter of much difficulty. While waiting for the return of the bird, and while I was peering among the branches, they were parted by a sudden breeze, and there, just before me, in a tall white birch, reposed the long sought nest, with the mother bird sitting upon it, not thirty yards from where I had waited two days.

Any one familiar with birch woods will concede the difficulty in ascending their trim, tall trunks, without the aid of climbing irons. In this instance the nest was placed in the extreme top branches of a tree whose greatest diameter was less than twelve inches, with scarcely a dozen branches, and these close to the nest, which was borne fifty feet upwards, and swayed by the slightest breeze.

A glance was sufficient to show that the nest could not be reached, as a man's weight in the top would bend it to the ground. Fortunately a strong young sugar maple tree grew near by, which I ascended. Then I drew the two trees together, forty feet from the ground, and bound them with a strong cord. The tree, thus reinforced, was strong enough to bear my weight until the nest and its two valuable eggs were secured. The bird remained on the nest until I was well up the tree, and then flew close overhead, where it was soon joined by its mate; and both kept up an incessant screaming.

The nest consisted of small, dead larch branches, thickly interwoven with a long, fine moss, or lichen, found in great abundance on the larch everywhere in that region. This substance also formed a soft lining to the deep, well-shaped structure. In the nest were over two hundred separate pieces, which had been carried, one at a time, from a marsh a mile distant. It therefore required the travelling of four hundred miles to do the work; and there were certainly as many pieces strewn upon the ground as appeared in the nest. The birds also made long circuits while about the nest and at the swamp, where the material was gathered, so that no less than eight

hundred miles must have been traversed while constructing the nest.

The eggs, as has before been stated, were two in number, and were slightly nest-stained. No. 1 is of a faint creamy white color, with points and small splashes of umber brown generally dispersed over the surface. There are a number of larger spots, and a large patch of the same color is spread out, almost covering one side of the egg. The shape is a short oval. It measures 1.90×1.52 inches. No. 2 is a creamy white, with scattered specks and spots of chestnut color, these increase in size until the larger end is heavily marked with large, bold spots of rich chestnut brown. Its shape is a perfect oval and it measures 2.00×1.51 inches.

The Number of Eggs Laid by the Swallow-tailed Kite.

BY N. S. GOSS, TOPEKA, KANSAS.

In commenting favorably upon a valuable paper, "Nesting of the Swallow-tailed Kite," by Mr. J. A. Singley, of Giddings, Texas, Vol. 11, No. 10, p. 154, of THE ORNITHOLOGIST AND OÖLOGIST, the Editor of the Oölogical Department makes reference to certain statements of mine, in regard to the nesting habits of the birds, that seem to call for some explanation, which I cheerfully give.

The four nests referred to, that came under my observation, ought to be taken as substantiating the conclusions reached by the Editor, viz: that two, or three, at most, should be entered as a full set. Major C. S. Clark, of the Ninth Kansas Volunteers, during the war, is my authority for the nest with six eggs, which, in the early settlement of the State, he collected from a nest in the branches of a tall tree on Deer Creek, in Allen county. A German from Woodson county, while looking over the birds in my collection, (then at Neosho Falls,) pointed to a Swallow-tailed Kite and said a pair of the birds built a nest in a tree on Owl Creek, and near his house; that he shot one of the birds, but failed to get near enough to kill the other; that he then climbed the tree, destroyed the nest, and broke the eggs, four in number, stating that he did this to save his chickens. I tried to convince him that the birds were harmless, but think I failed.

Such proof, from a scientific standpoint, might not be called good authority, but, coupled with the fact that Audubon and later writers assert that the birds lay from four to six eggs, I felt, from the light I had, that it would not be either safe or wise to change, in catalogue, the number

as given. In fact, I was governed, in my revised catalogue of the birds of Kansas, in the dimensions and color of the eggs, by the sets examined, but did not venture to change the numbers when uniformly given by other writers, fearing, from my limited observation, such changes might prove in error, or misleading. As to the theory, thought so "fanciful," that the crows had robbed the nests, I think it best answered by copying that part of my article from *The Auk*, viz.: "On the 27th of the same month (May) I found the other pair of Mississippi Kites nesting in the forks of a medium-sized oak, about forty feet from the ground. It was an old Crow's nest, fitted up with a few extra sticks and green twigs in leaf, for lining. In the nest there was one egg. I returned on the 2d of June for the eggs, found the nest robbed, and the birds sitting in a tree, near by, but they appeared to take no notice of, or interest in, the nest, as I approached it. On July 5th, in strolling over the grounds, I noticed one of the birds on the same nest. In it there was one egg in an advanced state of incubation, but with care I was able to save it. Color, pure white; measurements, 1.70×1.35 . This nest and the ones examined of *Elanoides forficatus* were on the breeding ground of the common Crows, which accounts for the robbery, and the few eggs found." Such was my belief then, and is now. I will only add that my brother (Capt. B. F. Goss) and myself found, one season, over ten Crows' nests in the vicinity, the farthest not over forty rods away from the described nests of the Kites.

With the well known thievish habits of the birds, I leave it to the reader as to whether the conclusion reached was a natural or "fanciful" one." I was not attempting then, nor am I now, to prove any number the correct one. What we want in this, and all such cases, is to get at the facts. And to this end I think all information bearing upon the nesting habits of the birds should be eagerly sought for and the results published.

[It is to be feared that Major Clark did not properly identify the nest with six eggs that he found, for surely it could not have belonged to *Elanoides forficatus*. The same remark will also apply to the German gentleman, who evidently desires to remain unknown to fame.

Mr. Goss will have to produce better evidence than this to convince the world that this bird lays more than two eggs.—J. P. N.]

We enclose with this issue a complete index for Vol. XI, compiled by the editor of the Oölogical department.

THE ORNITHOLOGIST —AND— OÖLOGIST.

A MONTHLY MAGAZINE OF
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ESPECIALLY DEVOTED TO THE STUDY OF

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THEIR NESTS AND EGGS.

DESIGNED AS A MEANS FOR THE INTERCHANGE OF NOTES
AND OBSERVATIONS ON BIRD AND INSECT LIFE.

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Editorial.

With this issue Vol. XI closes its record. For twelve consecutive months we have endeavored to place before our readers such facts as would be of interest to them in the pursuit of their chosen science, and they alone must render the verdict of our success. Our principles have been enunciated, and need no apology; we have always championed the cause of justice, with malice towards none, and so we will continue. It is not our purpose to eulogize our past work upon this magazine; but as it has been a labor of love, we may be pardoned for giving a prospectus of the coming volume. We certainly do not expect to part with any of our readers, as the attachment formed during the past year has prompted us to further efforts, which we fain would have them enjoy in results to come. As a prominent feature we shall begin in the early issues of the coming volume, a serial on some ornithological researches in Labrador, which cannot fail to prove of great interest. Prof. Dunsmoor will also inaugurate his articles on the

study of bird's nests—a new feature in the science. Under Dr. LeMoyn's pen the birds of eastern Tennessee are in a fair way to become as well known as those in any part of the country. He will continue his serial for several issues, only ceasing them to record a still less known country which he will visit this winter. Mr. C. F. Morrison will remain as a special correspondent in Colorado. He needs no qualification from us. Dr. Northrup, will, on his return from Mexico, give exclusively to this magazine the result of his explorations. A gentleman well known to our readers, whom we will announce later, will sail for South America, January 1st, to remain a year. We have secured the sole control of his manuscript for this magazine.

To our oölogical friends we can promise them nothing better than to say that their department will remain under the management of the same efficient gentleman as in 1886. From others of our correspondents who have favored us in the past, we shall expect a continuance, and whatever may have been the "sunset" of '86, the cloudless sky gives token of a brilliant rising of another year.

Honor to Whom Honor is Due.

Since his connection with this magazine the editor has received hundreds of letters of commendation of the ORNITHOLOGIST AND OÖLOGIST. Such kind missives were appreciated, and lightened his unremunerative task. But to him alone all credit cannot be given, and it is a pleasure to here acknowledge the services of his co-laborers. To his old friend, the publisher, who has allowed him full and free privilege with his magazine, and has assisted him in every possible manner, he would return many thanks. Perhaps the "hardest work and least glory" came to the lot of him, who in the interesting science of oölogy, gave evidence of his supreme fitness for its control in these pages. But he was not

sectarian; many an interesting article outside of his particular field did he secure by his indefatigable labors, and without his aid, and more than that his valued friendship, we would fail in our endeavors. Knowing as we do his high standing as an expounder of Blackstone, and interpreter of the immortal Bard, we deem it a sacred privilege to call him friend; and from the knowledge to be obtained from his fine oölogical collection, it is a source of congratulation that he identifies himself with this magazine.

The entomological science is outside of our scope of labor, and all credit for success in that department must be given to those in charge, and of which we retain but pleasant memories.

For all that has been good and worthy of approval in the past volume we beg to be accredited to our associates, and whatever has fallen below the standard we will take the responsibility, hoping to still improve toward a shining goal. With such a past harmonious friendship between those in charge, and appreciation from our readers, when viewed from our standpoint, we can answer back to the publisher's wish in January for a "glorious sunset in '86," with December's cry in the affirmative.

Some Notes on the Eggs of Leconte's Thrasher.

BY HARRY G. PARKER, CHESTER, PENN.

The eggs of Leconte's Thrasher (*Harporhynchus redivivus lecontei*), have been so seldom found, and there are so few authentic sets in collections, that it becomes a matter of interest to know the whereabouts of such sets, with such additional items bearing upon the subject as may be obtained. With a view to presenting such facts, I have had recourse to the notes of Mr. F. Stephens, of San Bernardino, California, and of Mr. R. B. Herron, of Colton, California,—the two gentlemen who have had the best opportunities of studying the habits of this bird, and who have collected the majority of the sets that have been taken. To both of these gentlemen I wish to return my best thanks for information received from them.

I cannot do better than give Mr. Stephens' notes entire, and in his own language:

"At your request, I have looked over my note books for data of eggs of *Harporhynchus redivivus lecontei* taken by me. They are as follows:

"No. 1. A set of three eggs found March 29, 1884, near Agua Caliente, Cala., in the western end of the Colorado Desert. The nest had been abandoned, but I have no doubt of its identity. This is the set mentioned on page 357 of *The Auk* for October, 1884. It is in the collection of Mr. R. M. Mitchell, Apopka, Florida.

"No. 2. A set of two eggs, in an advanced stage of incubation, taken April 8, 1885, near Agua Caliente. Parent seen to fly from the nest and joined by its mate; ♀ shot. One egg smashed in blowing, the other (in poor condition) is in my possession.

"No. 3. A set of three nearly fresh eggs, taken near Cabazon, Cala., May 7, 1885. Parent seen to fly from the nest. This set is in the collection of Mr. B. F. Goss, Pewaukee, Wis.

"No. 4. A set of four eggs, Agua Caliente, 22d of March, 1886. Parent seen to fly from nest. Set and nest in U. S. National Museum.

"No. 5. A set of three eggs taken near the same place, March 30, 1886. Parent seen to fly from nest. Nest and set in National Museum.

"Nos. 6 and 7. Two sets taken in April, 1886, and sent to Mr. G. Frean Morcoru, Chicago, Ill., in whose collection they now are.

"These comprise all the eggs of this species that I have taken, but I have seen several nests containing young, and many old disused nests.

"Owing to the climate in the localities frequented by this species, and the greater part of the nests being made of dry twigs, the nests remain in position many years. The lining being of more perishable material soon decays, and lies matted in the hollow of the nest. The usual situation of the nest is from two to four feet from the ground, in the midst of a cholla cactus, a bush-like cactus growing some five or six feet high, and often quite dense. One would suppose the mass of thorns would be a thorough protection, yet the little Harris squirrel (*Tamias harrisi*), sometimes robs the nests of this and other species placed in such cacti. While I have seen a very few old nests of *H. redivivus lecontei* in other plants, (one in a mezquite, and one in a turpentine tree,) such cases are exceptional.

"So far as I know, the only persons who have taken authentic eggs of *H. redivivus lecontei* are Mr. Holterhaff, R. B. Herron, Dr. E. A. Mearns, Mr. W. G. Wright, and myself.

"Mr. Wright's two nests were as follows: A set of three eggs, taken in 1885, and sent to the

British Museum; data with set but no other notes preserved. A set of three eggs taken in March, 1886; eggs and data sent to Mr. Wm. Brewster, Cambridge, Mass. Nest sent to British Museum. A nest taken in May, 1886, without eggs, and sent to Mr. Brewster."

The above is what Mr. F. Stephens has furnished me, and records the capture of nine sets—one of which (No. 2,) is defective. The following is from the note book of Mr. R. B. Herron, and brings the number of sets up to eighteen:

"First nest taken in May, 1881, near Cabazon, Cala., and contained four eggs. Next found a nest May 14, 1883, containing three birds almost ready to leave the nest. Also on same day saw a pair of birds building a nest that was almost completed, the eggs of which I got a few days later. This set was sent to Mr. Oliver Davie, Columbus, Ohio.

"Again on April 10, 1885, I found a nest containing three eggs, and on June 5, 1885, I found three nests of this rare bird. The first of these contained two young birds nearly ready to leave the nest, and one addled egg. The second nest contained four eggs that were on the point of hatching, and the third nest contained four fresh eggs which I secured. Two or three other sets taken during April and May, 1885, and of which I have retained no data were sent to Southwick & Jencks, Providence, R. I."

Mr. Herron's observations of the habits of these birds are of so much interest that I give them in addition to those already recorded by Mr. Stephens. He says: "All the nests of this bird that I have examined were placed near the centre of a thick cholla cactus, from one to three feet from the ground. They are rather large and bulky affairs, caused by the loose external framework or skeleton nest made of coarse twigs, in the centre of which is placed the nest proper. This is composed of a very thick matting of a fine woolly plant which grows about one inch high, and which is pulled up entire by the birds. This is firmly pressed together, and makes a very warm and soft nest in the midst of so many thorns. The cavity is quite deep, so that the bird is well concealed when sitting. They are close sitters, and at times will allow the nest to be gently poked with the muzzle of your gun before they will leave it; but when they have once left the nest and reached the ground, after a short low flight, their movements and actions at once become both shy and rapid; and if wanted they should be shot at the first opportunity, for if pursued they at once disappear among the cactus, or at least keep out of gun range. At

other times after leaving the nest they will run off a few yards, and if not pressed will hop to the top of a bush and utter a loud, clear whistling note, (similar to that of a man whistling for a dog,) which will soon be answered by the mate who immediately comes to see what is the matter."

Both male and female assist in building and incubating. Mr. Herron in speaking of the nesting period, says: "The season of nesting of this bird is a very long one, as I have killed young birds during the first week of April that had been out of the nest at least ten days, they being almost fully feathered. This would show that some at least commenced laying some time in February."

In *The Auk* for July, 1886, Dr. Mearns described a nest and set of three eggs which he took in Arizona.

The first eggs of this bird, and in fact the first description of their nesting habits that was published, appeared in *The American Naturalist*, Vol. XV., No. 3, March, 1881, page 211. Mr. E. Holterhaff, Jr., was the fortunate discoverer, and I wish that he could have given a more detailed account of the type set. His nest was found in July, 1880, at Flowing Wells, in the Colorado Desert, California. The nest was placed in a palo verde tree and was a large and bulky affair, measuring externally nine inches in depth, and six inches in width. The hollow of the nest was fully three inches in depth, and it contained two eggs "that were somewhat smaller than the Californian Thrasher (*Harporhynchus redirivus*), lighter in color, and marked all over with finer reddish spots, thicker at the larger end."

This completes, so far as I can ascertain, a list of all the authentic sets that have been taken.

A set of four fresh eggs taken by Mr. Herron on June 5, 1885, as detailed above, is now in the collection of the present writer, and the following is a description of each egg separately:

No. 1 measures 1.11x.75. Very light and delicate greenish-blue; in shape elongated oval, and tapering to a decided point, much more so than in Palmer's Thrasher (*H. c. palmeri*), and equal to the most pointed examples of Curve-billed Thrasher (*H. curvirostris*). The spotting is entirely of reddish-brown, sparingly displayed but forming a well-defined wreath around the greater end of the egg. These spots, or rather minute dots of reddish-brown, are distributed over the entire egg, quite sparingly toward the lesser end, but they are not nearly as numerous as in eggs of Curve-billed Thrasher, and in fact could easily be counted.

No. 2, 1.08x.77, being therefore more rounded and less elongated than No. 1. The spotting and dotting is distributed in places over the egg. Faint lavender shell marks are apparent. The spotting is in no place confluent, each spot being separate and distinct, and as in the other eggs of the set, found more thickly about the larger end, and entirely absent at the smaller extremity.

No. 3. The yellowish-brown spots on this specimen tend more to become confluent than in the others, being especially numerous all over the greater end, and gradually becoming fainter till at the opposite end they are lacking altogether. This egg measures 1.07x.77.

No. 4. Is quite obtuse, measuring .97x.79. But very few spots are seen on the egg at all, these being confined to the larger extremity. Two-thirds of the surface is plain, unspotted, greenish-blue.

To compare these eggs with those of kindred Thrasher, I would say that they are much smaller and of a lighter and more delicate shade than those of the Californian Thrasher (*H. redivivus*), about the same size as those of Curve-billed Thrasher (*H. curvirostris*), but the spots and dots are much less numerous and of a lighter shade; and a set of each side by side show differences more easily discerned than described, and greater than would be exhibited in any number of sets, in a series, of Curve-billed Thrasher. Dr. Mearns describes his set as being somewhat deeper in color than Palmer's Thrasher, (*H. c. palmeri*). This would seem to indicate that the ground color varies in different sets, as the set before me is much lighter than any set I have seen of Palmer's Thrasher. The eggs of Palmer's are more blunt-ended, fuller, and more rounded than the present examples of Leconte's Thrasher, and an egg of the latter can instantly be picked out of a handful of those of the Californian, Curve-billed, and Palmer's Thrashers.

Nesting of Swainson's Warbler in South Carolina.

BY ARTHUR T. WAYNE, CHARLESTON, S. C.

Swainson's Warbler (*Helonæ swainsoni*), arrives in the vicinity of Charleston about April 9th, and is with us all the summer. The latest fall record I have is September 25th; but some of them commence to migrate during the first week in August.

When they arrive in April the males come first (as is the case with most birds) and the females are seen from five to seven days later. The males are silent for a few days, but as soon as the fe-

males are in force they begin to sing with great fervor. The song is simply wonderful—a clear ringing ventriloquial whistle, which can be heard for at least a quarter of a mile. This song is not characteristic with all the males, however, for I have only heard it on three occasions—April 22d, 1884, May 5th, 1884, and August 25th, 1886. The song is much like that of the Hooded Warbler, (*Myiodiocetes mitratus*), and almost precisely like the first notes of the Yellow-throated Warbler, (*Dendroica dominica*), but the ending is exquisitely mellow. (The above song is only applicable to the breeding season, which begins about May 3d, and lasts until the middle of August).

The haunts of Swainson's Warbler are known as "pine land gall." This is a large, dense swamp of oak, pine and dogwood—almost impenetrable. There are also thickets and patches of cane, with a brook running in straight, or zig-zag lines throughout the swamp, and with ponds of water here and there. This kind of a swamp may extend for miles in a straight line, and only a few rods wide, while on the contrary, I know of one near Charleston which is ten miles long by three miles wide. In such a place Swainson's Warbler breeds.

They commence building their nests about the last week in April, and have them finished by the first of May. I have taken sets of four fresh eggs on May 8th.

The nests are generally built in canes, but I have also found them in small bushes, and in one instance in a climbing vine, by the side of a large public road. The height from the ground varies from two to eight feet, but they are always near or over a pond of water. The nest is a remarkable affair—very large, made of water-soaked leaves of the sweet gum, water oak, holly and cane, lined with needles of the pine trees and a little dry moss. The stems of the leaves point upwards, and the nest can easily be mistaken for a bunch of old leaves lodged in the top of a cane. On this account it is a very difficult nest to find.

The eggs are unspotted, being white and glossy in examples that were fresh, but in others, in which incubation had commenced, they have a bluish tinge.

Of all the specimens that I have taken the color is immaculate, save in one set of three eggs, in the possession of my friend William Brewster, Esq., which are much spotted with golden brown and pale lilac around the larger end. They measure .75x.58, .77x.58, and .74x.58 inches.

In number the eggs vary from one to four—more frequently three, and rarely four.

The female is a close sitter, and can easily be

approached when incubating. I have repeatedly taken them while on the nest, and on one occasion stroked one of them on the back while incubating. When started from the nest they flutter about with extended wings, as if they were about to expire, and drag their legs after them, in the same manner as the Ground Dove, (*Chamapelia passerina*).

I have known a pair to lay four different times, and I took their eggs each time.

They are eminently terrestrial in their habits, but I have shot them from the tops of very high trees. Their food consists principally of spiders and green worms.

Nesting of Swainson's Warbler.

BY T. D. PERRY, SAVANNAH, GEORGIA.

Mr. Arthur T. Wayne, of Charleston, South Carolina, has, I believe, the credit of first discovering the nest of this rare swamp warbler, (*Helonaea swainsoni*). In *The Forest and Stream* for July 9th, 1885, Mr. William Brewster recorded the taking of two nests by Mr. Wayne, near Charleston, South Carolina; and in *The Auk* for October, 1885, Mr. Brewster writes of the finding of two other nests by Mr. Wayne.

Now I do not wish to take any of the credit away from Mr. Wayne, but the fact remains that I really found the nest of this bird previously, as my first nest was taken May 16th, 1885, twenty-one days before Mr. Wayne's first nest; which was found June 5th, 1885. But his was recorded, while mine was not, through neglect on my part.

The nest that I found on May 16, 1885, was placed in a bunch of saw palmetto, about three feet from the ground, near a running stream. I flushed the bird from the nest, but was unable to see it, as the undergrowth was so thick. As the bird did not return, I took the three eggs which the nest contained; and about that time Mr. George Noble, who was collecting with me, called out, asking me what I had found. I replied, "three eggs, something like Bachman's Finch," (*Peucaea aestivalis*). I thought it strange, however, that the nest should have been placed in a bunch of palmetto, instead of on the ground.

Time passed by, and on May 31st, 1886, I found my second nest of this species. It also contained three eggs. This time I shot the bird, made a rough skin, and had it identified by the National Museum, at Washington.

My third and last nest containing eggs (for I have found several with young) was taken July 13, 1886. It likewise contained three eggs, slightly incubated.

I have compared the eggs of these three sets and can find no difference in them. All are of a pale bluish white, fading to white after being blown, and they have somewhat of a polish. They are entirely unmarked, but I understand that some of those found by Mr. Wayne had specks, and one was blotched with lilac. Mr. Wayne has also taken four in a set, but mine were all three in each nest, and incubation had commenced in every instance; leaving little doubt that three is the usual number. Three selected eggs measure .76x.53, .75x.52, and .76x.56 inches.

All the nests are essentially the same, being composed outwardly of leaves laid in layers, and lined with pine needles and fine fibrous roots resembling horse hair. The only difference I can see is with regard to the situation of the nests. My first nest was in a palmetto, three feet from the ground, near running water. The second was in a bunch of canes, four feet above a running stream; and my third was in a cluster of thick (dead) vines, three and a half feet from the ground, and at least a hundred yards from the water, but near a large swamp.

I think this species must raise two broods in a season, as I found eggs on May 16th, with incubation advanced, and on July 13th with incubation slight.

When their nest is approached they fall to the ground and flutter along, beating the ground with their wings, and appearing to be in great distress. They go about eight or ten feet from the nest in this manner, and then return and repeat the performance.

They do not seem at all shy at that time, but, on the contrary, are so much attached to their nest that it is almost impossible to get them far enough away to shoot them without ruining the bird for a skin.

They have no song that I know of, and I have never heard them utter a note except a slight chirp; and they are very quiet in all their actions, keeping well to the ground and low undergrowth much in the same manner as the Golden-crowned Thrush, (*Sturnus auricapillus*).

Nesting of the American Long-eared Owl.

BY THOMAS H. JACKSON, WEST CHESTER, PA.

The Long-eared Owl, (*Asio americanus*), is one of our commonest winter *Raptores* in this part of Pennsylvania. During some winters they are exceedingly abundant in and near our town, associating with the Short-eared Owl, (*Asio accipitrinus*), and hiding by day among the thick ever-

green and fir trees that are numerous in the lawns and nurseries in the vicinity of the town.

But as summer residents they may be considered extremely rare, only two or three instances of their nesting in the county (Chester) have come to my notice. The only data, however, to which I have access is that of a set of five taken by myself on the 15th of April, 1870.

These eggs are as brilliant and glossy now as on the day they were taken, over sixteen years since. The location of this nest was near the centre of a large tract of woodland. It was placed in the crotch of a medium-sized chestnut tree, about thirty feet from the ground. The tree sloped over a ravine, and was not at all difficult to climb.

The nest was evidently an old structure, probably one that had been used by a pair of Crows the previous season. The interior seemed to have been torn out, and replaced by coarser materials than are usual to the Crow, making a platform-shaped nest of sticks, pieces of bark, etc., with a few feathers.

Upon this the eggs, five in number were placed, and from the length of time the bird had been sitting—probably ten days or two weeks, they were much soiled and stained. This, however, was easily removed by an application of soap and water, which left them a very handsome set. These eggs have the usual shape that distinguishes the Long-eared Owls, an elongated form with both ends so nearly of a size in some of them as to make it impossible to tell the large from the small end. The measurements of this set are 1.58x1.28, 1.58x1.29, 1.59x1.28, 1.65x1.26, 1.65x1.29.

The female did not leave her nest until I had almost reached her, and then she flew, or rather dropped to the ground, and went through a series of evolutions that would lead a novice to imagine she was badly wounded, or in her death agonies.

I do not remember that she uttered a single vocal sound, although she manifested great displeasure by loud snapping of her beak as she flew around me at close quarters.

A long search through all the adjacent woods later in the season failed to discover a second nest of these birds, and, indeed, never since have I found the Long-eared Owls breeding, or heard of any other sets of their eggs being taken in this county.

The murderous law passed by our State legislature some two years since, and which has been in full operation the past season, is doing its full share toward the extermination of this innocent bird, along with its more objectionable relative, the Great Horned Owl, which is really the only species of our *Raptores* of doubtful use to mankind.

ENTOMOLOGY.

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Sphingidae of New England.

BY WRIGHT & BATES.

SPHINX CELUS.—Hub.

Head and palpi ashy-gray; tongue twice as long as the body; thorax ashy-gray with two irregular transverse black lines crossing the anterior portion, and two more originating at the sides of the metathorax and meeting at the centre of the second transverse line; metathorax with a large black patch on either side, surmounted by two tufts, bluish in the middle. Tibiæ and tarsi of fore legs armed exteriorly with a row of strong black spines.

Abdomen dark gray, with a slender black dorsal line, five or six orange-yellow spots on either side, separated, and all but the anterior, bordered by black bands having white spots above and beneath at the junction of the segments. Under side of the thorax and abdomen ashy-gray, shaded with reddish, the latter with a ventral row of black spots.

Anteriors gray, shaded with brownish in the middle; three slender black lines run from the basal portion of the inner margin obliquely to the disc; three more arise at about the middle of the inner margin and curve toward the inner angle, thence undulating across the nervules, where they form a blackish shade, to the costal edge; a slender black line runs along the sub-margin from near the inner angle, followed by a white line, both parallel with the margin until they near the sub-apical line, where they turn toward the disc, forming nearly a right angle; an apical and sub-apical black line extends toward the disc; two fine parallel black lines, connecting apically, extend from near the apical end of the marginal black line, almost to the disc, between the last sub-costal and the first median nervules.

Posteriors light gray, with a black spot at the base, followed by a short black line and then by two central serrated black lines extending across the wings; marginal space dark gray, bordered broadly above with black. Fringes gray, spotted with white.

Under side gray, both wings being crossed by two black lines, crenated anteriorly and becoming almost obsolete on the anteriors; marginal space

darker; apical and sub-apical lines very prominent. Expanse five inches.

Mature larva green, with a black stripe on either side of the head, a black patch on the first segment, lateral greenish-yellow bands at the junction of each segment and a stigmatal stripe of the same color. The stigmata are all black except the first and last which are orange-yellow. The body is covered with yellowish dots and has a series of short black lines above the lateral bands. Transformation subterranean.

Pupa dark brown, with a long, arched, detached tongue case.

Food plants: Potato, tomato, stramonium and ground cherry.

Lady Birds.

Lady Bird, Lady Bird,
Fly away home;
Your house is on fire
And your children all burned.

How few there are who have not repeated these few simple lines in childhood's happy hours, yet how little many of us knew, or I might say know as to their habits or the number of their species; whether they were useful or otherwise, in fact, what was their mission in life. We become so accustomed to looking at everything superficially, that we seldom stop to examine into the details of the life history of our little friends or enemies, although could we but realize beforehand, the wealth of information and amusement to be gleaned from a better knowledge of the smaller children of nature, how eagerly we would cultivate their acquaintance.

Of this family, *Coccinellidae*, we have, according to the latest Check List (Henshaw's), in America, north of Mexico, no less than twenty-four Genera, containing one hundred and forty species with nineteen varieties and three that are doubtful.

In both the larval and adult states they are carnivorous, living exclusively on other insects in their various stages. The common idea amongst those who know a little about them, is that they live entirely on *Aphidae* or plant lice. Such is not the case. This summer I had unusually good opportunities to watch the habits of some members of the family, such as *Anatis* 15-punctata, *Oliv. Megilla* maculata *De G.*, *Hippodamia* glacialis *Fab.*, *H. convergens* *Guér.*, *H. parenthesis* *Say*, *Coccinella* trifasciata *Linn.*, *C. novem-notata* *Hbst.*, *C. transversoguttata* *Fab.*, *C. sanguinea* *Linn.*, *Adalia* frigida *Schn.*, *A. bipunctata* *Linn.*, and *Chilocorus* bivulnerus *Muls.* I found that although the plant lice were their favorite food, they did not by any means confine themselves to that diet, when pressed (even

slightly) by hunger. At such times they would attack much larger game, and even the smaller members of their own species. It was nothing unusual to see a large larva holding up a smaller one and extracting its juices, and I have frequently seen the mature insect devour another that had just emerged from the pupa case. One case in particular impressed itself on my memory. A friend of mine informed me that he had located a fair-sized green worm under the cap-piece of a fence, but as it showed evidence of an intention to transform and consequently would be likely to remain there, and as he knew that I would be passing the place a few hours later, he decided not to disturb it. Of course, I was anxious to secure the specimen for my vivarium, but on reaching the place I found that I was doomed to disappointment. A large larva of *A. 15-punctata* had attacked it and was enjoying a nice toothsome repast from my desired victim. When I found that it was only a cabbage-worm, *Pieris rapae*, I did not feel the loss and the information I had gained would have more than repaid me for the loss of a much finer specimen.

I reared quite a number of *Coccinellidae*, both from the eggs and larvæ, but was not very successful in getting them to color well. The majority of them, after completing their last transformation, died while still quite light colored.

CYANIDE.

Winter Work.

BY L. E. HOOD.

As winter approaches, the young collector is apt to consider the season's collecting at an end and will begin to classify his insects and arrange for exchanges. This is well enough in a way, but there is no reason for postponing your collecting, for many good species can be secured in the cold weather.

Of course, species will be fewer and hard to find, but if you are careful you can enlarge your collection by searching among fallen leaves and in moss, when the snow will permit, under the bark and in the wood of partly dead trees, while boards and trunks of fallen trees often shelter beetles.

The sieve may be used to advantage in securing the small species found in moss and among the leaves, and at all times of the year is one of the most practical appliances known to the collector of *Coleoptera*, and can be easily made by tying a V shaped bag of fine woven cloth to a sieve with moderately coarse meshes; by putting in a few handfuls of leaves and moss and shaking the

sieve as a cook will in sifting flour, you can readily dislodge any small beetle that may adhere. I believe this sieve with the umbrella, sweep net and small light net to be indispensable to practical collecting, and I urge the liberal use of both sweep or beating net and sieve.

During the winter months you can arrange and label your collection, and if you have kept a note book, which you should always do, you can make an index or synopsis of your notes of appearances and characteristics of the insects found, and if you have these notes under dates properly kept, they will be of great value to you in after years.

If you have handled your insects carefully and classified them, you will find no difficulty in exchanging your duplicates for species new to you.

Beetles common in New England may be rare in Illinois, and species common there may be rare with you. By exchanging you can add valuable species and at the same time increase your knowledge of the distribution of the insect fauna of our country.

It is preferable for a collector to devote his time to one order, unless he is a professional student, for if you wish to make the study of entomology a pleasant auxiliary to business cares, and wish to gain both pleasant knowledge and delightful recreation, you will receive more satisfaction from one order diligently collected than from a more extensive collection. A collection gains in interest as it increases, and as the more common species are secured you must rely more and more on rare forms or species from other localities, and a constant acquisition of rare and interesting beetles will be a source of constant delight; yet it is well, perhaps, to keep any interesting butterflies or other insects you may find, and exchange them when you have a chance, for beetles.

You will find ample material for study and work in any one single order of American insects, and unless your time and means are unlimited you will find it a life's work to nearly complete your order.

One of the greatest difficulties in the path of the amateur will be to properly classify his collections. Only a few species of the Coleoptera can be readily named from popular books, and it is a difficult matter to form a good working library, owing to the majority of the descriptions of Coleopterous insects being published in various transactions and other publications of societies; but with the help of more experienced entomologists, who are ever ready to give valuable aid, and with the books easily procured, the student will be able to gain much knowledge, and as time goes on and he becomes better ac-

quainted with his collection, he will be surprised to find what now seems an almost impossibility, becoming an easy and interesting study.

Sphinx Ligustri.

PAUL REVERE.

Several years ago I received from the west a dozen eggs of the English Hawk Moth, (*Sphinx ligustri*) with instructions to feed the larvæ upon the foliage of the sweet potato vine. I might as well have been advised to feed them upon the foliage of the palmetto tree, for one is just as plenty as the other in this latitude. A substitute must be found, and I turned instinctively to the lilac, because the leaves of this shrub resemble those of the sweet potato. The larvæ made their exit from the egg in the night time, and unfamiliarity with this habit was the cause of my losing several before I discovered them. To my surprise they took readily to this substituted food, fed ravenously and manifested great steadiness in their purpose to subsist and reproduce their kind. They showed little nervousness or disposition to roam, and their adherence to their food made them very little care.

The rapidity of their growth and marked prosperity, led me to suspect that lilac was a preferred food, and after consulting several entomological works I found that Figuiet, in his "Insect World," gave lilac as a natural food for the larvæ.

These eggs were received on June 27th and hatched on June 30th. The larvæ were light apple-green in color, about one-third of an inch in length, with a black caudal horn one-twelfth of an inch in length. They rested near the midrib of the leaf during the day and fed in the night. They grew rapidly, passing their first moult on the fourth day. On the 8th day of July they cast their skins and showed clearly the dark oblique line at the sides. On the 20th of July they were three inches in length, had passed the third moult, and were assuming the pinkish hue which indicates their maturity and the near approach of the burrowing season. On the 28th of July all the larvæ had gone into the earth and they remained there until the 7th of the following June, a period of ten and one-half months.

I mated a pair the following season and had an hundred eggs. I had no trouble in feeding them, and they grew with a small per cent. of loss by death. After they had reached the second moult they disappeared in a night. I was at a loss to know what became of them. As they were kept in a close attic room, I searched the place thoroughly without finding a trace of them, after

which I concluded that they must have formed a sumptuous feast for the mice that infested the place.

This closed my *Sphinx ligustri* experiment. This moth is now found wild in Illinois, and is too common to breed, except for the purpose of noting its habits.

The moth measures four and one-half inches in breadth of wing. The fore wings are reddish-gray, veined with black above. The hind margin having a brown band upon it, extending to the outer third; upon the out edge of the wing are two white and a black line running two-thirds its width. The hind wings are rose-colored, with three black bands. The thorax is dark brown and the abdomen is ornamented with eight transverse bands, rose-color and black alternating. There is a brown stripe on the top of the abdomen, divided by a black line. It is known popularly as the privet hawk moth in England, and is very pretty.

CORRESPONDENCE.

Birds and Man.

EDITOR ORNITHOLOGIST AND OÜLOGIST. Dear Sir:—How many of our active ornithologists, while engaged in the delightful work of studying birds, consider that the birds too are busy—studying man? The swallows know the kindly and intelligent farmer who permits them to construct their homes unmolested in the eaves of his barn, and year after year they return to that secure retreat and raise their young in peace, amply repaying the farmer for his protection by the destruction of myriads of insects.

Persecute the graceful birds and in a year or two they will cease to return to that spot to build. They have learned something of human nature and will henceforth avoid those who treat them with cruelty. So it is with all birds; man is their most terrible enemy, but how soon they learn to know those who are gentle and kind, doing them no evil. Aside from the instinct which guides the birds to note the good and evil of mankind for the protection of their young, many evince a great curiosity to know something about that most curious animal—man, that is indeed interesting. In the woods I have found that often the best way to study birds was to rest quietly in some shady nook and wait for the birds to begin investigating me. There is quietness round about; now a gentle rustle of fallen leaves, a crack of a twig show that feathered friends are approaching to satisfy their curiosity, and soon I will be as much an object of interest to them as the Chinese giant to the visitants of a dime museum. However, I feel that I can endure such scrutiny, and return the compliment by taking notes of their appearance and actions.

The sea-birds, also, are inquisitive. While sitting musingly on a great rock by the sea at Monterey, lately, I found myself an object of singular interest to a pair of Loons, (*Colymbus pacificus*.) At first they were quite far out from shore, but came nearer by successively diving until within gunshot. A suspicious movement on my part would cause them to withdraw, but several times they approached very near me, showing plainly by their actions a desire to make my acquaintance, provided I did them no harm.

H. R. TAYLOR.

The A. O. U. and the Amateurs.

EDITOR ORNITHOLOGIST AND OÜLOGIST.—Sir: In the October issue a correspondent, Montague Chamberlain, very *gentlemanly* endeavors to force some of his statements on your readers as facts. He arraigns my statement that "there is a disposition of the members of the Union to ignore the privileges of the young students of ornithology" as false. I again reiterate the statement and fully believe I am supported in my views by many. As the laws are now worded, a person to gain a permit to collect, must give bonds, and I know that many who are entitled to a permit are debarred for that reason. *What scientific body recommended such laws?* Also, did not the A. O. U. desire a law by which all applications for a permit must be signed by some scientific gentleman? Who are these scientific gentlemen? Why! members of A. O. U., and they would thus have the whole thing in their control—if they could.

I also know of a member of A. O. U. who offered to procure a permit for a taxidermist, but there was a *reason*. He wanted to send the taxidermist on a collecting trip for his (the "scientist's") collection, already overstocked. The taxidermist refused to collect for him in such quantities as he desired, and asked him to sign an application for his (the taxidermist's) own collecting in a small way. He was refused. You can see the motive at once, and I am sick of such doings. I have no objection against the scientists collecting all they choose, but don't like to see them pretend to do better than the amateur.

Mr. Chamberlain an amateur! Very well, perhaps Mr. Chamberlain will define the word "amateur." We may be obliged to coin a new word for those who aspire to less pretensions than Mr. C. if he claims to be an amateur.

W. DEFORREST NORTHRUP, M. D.

Las Vegas, N. M., Oct. 30, 1886.

The A. O. U. Meeting.

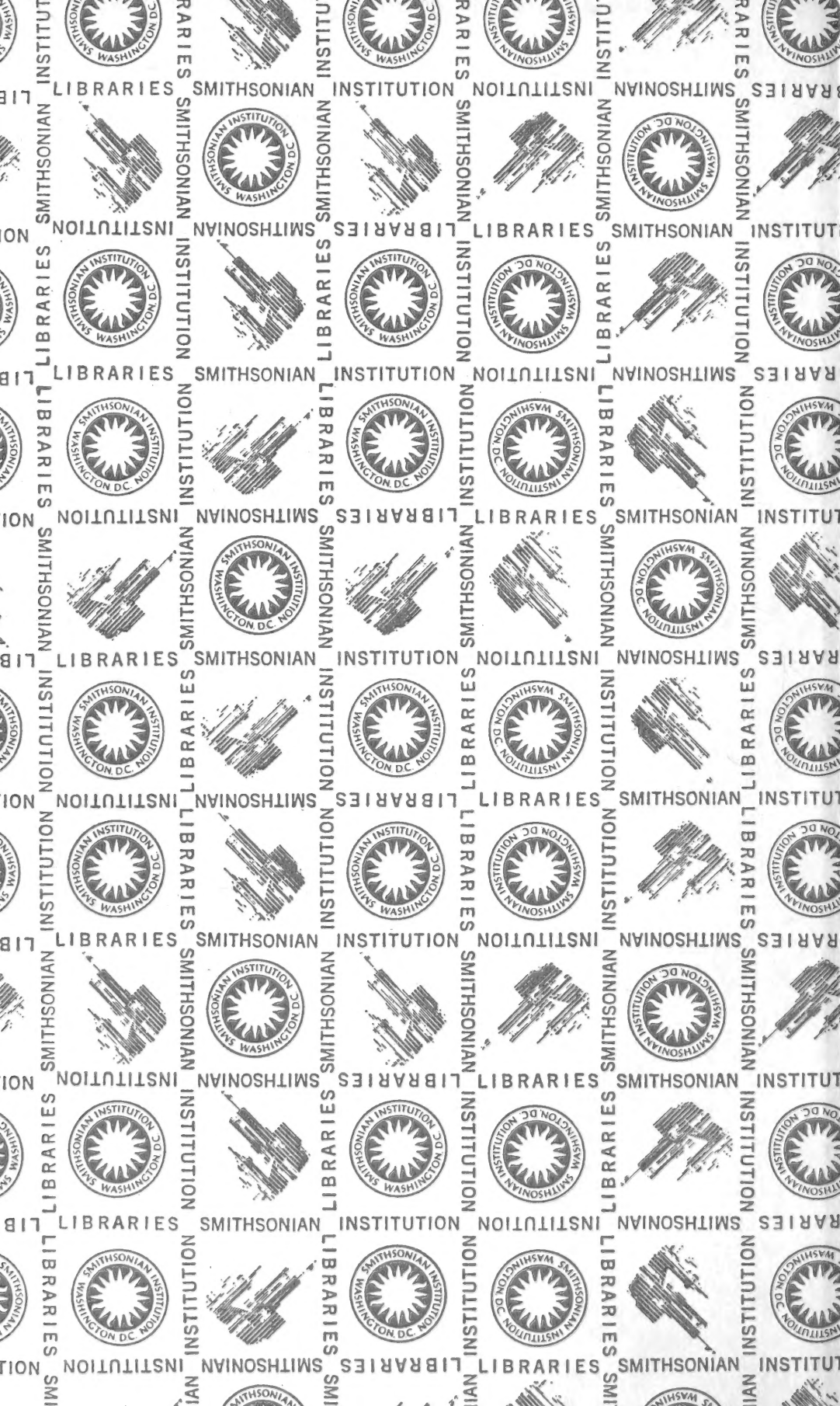
The fourth annual meeting of the American Ornithologists' Union, was held at the National Museum, Washington, D. C., beginning Nov. 16th. Among the gentlemen present were Mr. J. A. Allen, Mr. G. B. Sinnett, Mr. L. S. Foster and Mr. Wm. Dutcher, of New York; Prof. Baird, Mr. Ridgway, and Drs. Coues, Merriam, Fisher and Stejneger, of Washington; Mr. Wm. Brewster, of Cambridge; Mr. J. H. Sage, of Portland, Conn., and Col. N. S. Goss, of Kansas. The officers elected for the ensuing year are as follows: President, Mr. J. A. Allen; Vice Presidents, Dr. E. Coues and Mr. R. Ridgway; Secretary, C. H. Merriam; Treasurer, Mr. C. B. Corey; additional members of council, Prof. S. F. Baird, Mr. Geo. N. Lawrence, Mr. Wm. Brewster, Mr. M. Chamberlain, Mr. H. W. Henshaw.

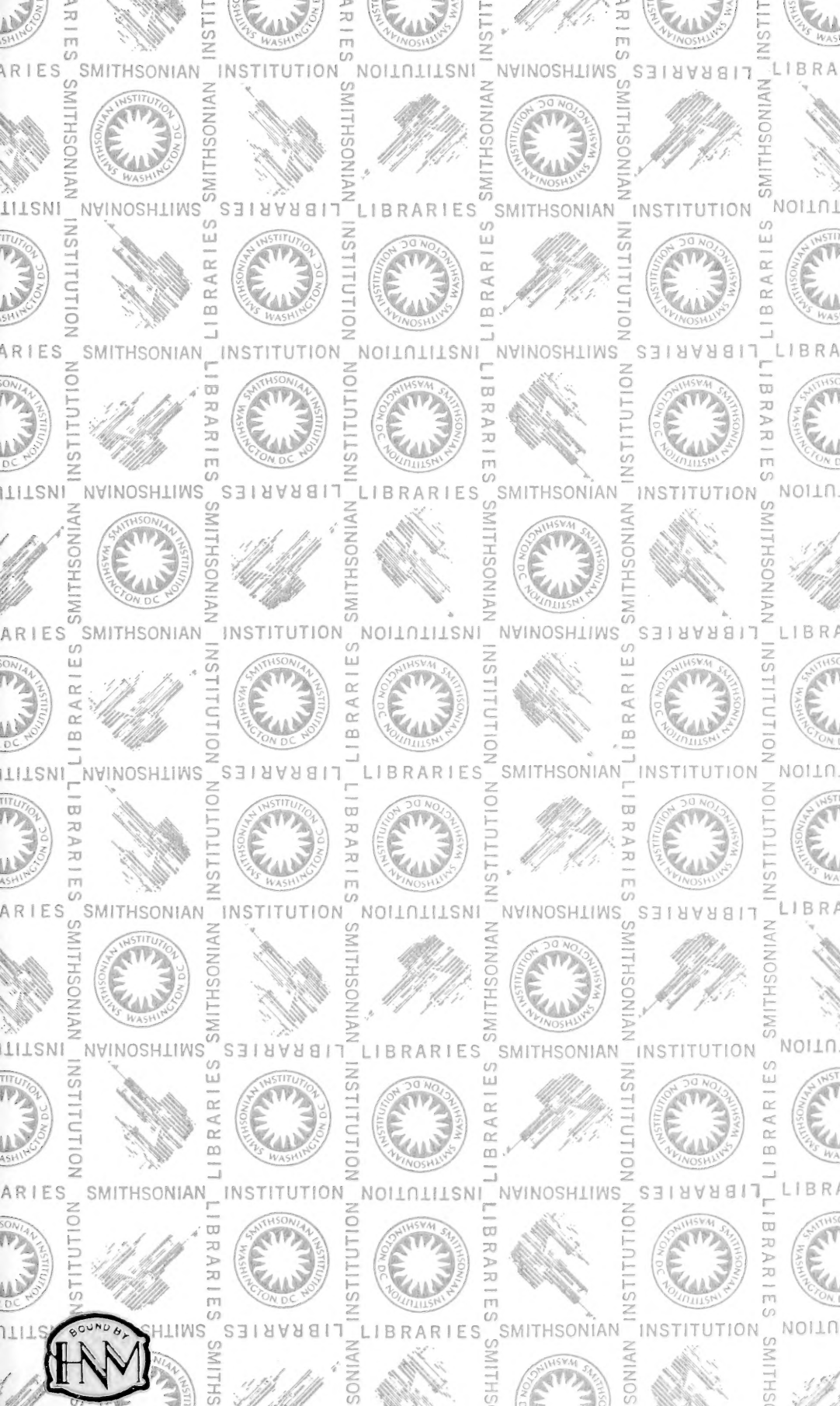
The meeting "was not characterized by any important action looking to other than the development of the several branches of its work already begun."

The next annual meeting will be held in Boston, Oct. 10, 1887.

W. W. B.

The crusade against the hawk and owl scalp bounty is gaining strength daily. The border counties of Western Pennsylvania complain that the Ohio farmers gather the eggs of owls and hawks and raise whole broods of such birds for the Pennsylvania bounty trade. This will never do. The Legislature will either have to put a tariff on owls and hawks and protect Pennsylvania's owl and hawk-raising industries against the pauper owl and hawk raisers of Ohio, or it will be forced to repeal the bounty law on scalps and compensate the farmers for each chicken stolen by these winged marauders. If the present bounty law is more absurd and liable to abuse than a law compensating farmers for lost chickens, what an absurd law it must be, to be sure.—*Phila. Times*, Nov. 30.





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